Aero Southwestern AVIATION

FEBRUARY 1936

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Quality Base

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Aircraft 1936
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Lockheed 12
Taylor Cub J2
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SOUTHWESTERN AVIATION

The Complete Monthly Digest of Aeronautics in The South and Southwest

FEBRUARY

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Hughes, Gamma and Cyclone

On January 14, Howard Hughes hurled his Cyclone powered Northrop Gamma across the continent to a new speed record in 9 hours, 25 minutes and 10 seconds, breaking Roscoe Turner's transcontinental speed record of 10 hours, 2 minutes and 51 seconds.

Hughes' average for the nonstop flight was 263.5 miles per hour over the 2450-mile course between Burbank, Cal., and Newark, N. J.

The new Series G Wright Cyclone of 950 h. p. furnished the power. With 690 gallons of gasoline on board at departure, approximately 225 gallons remained in the tanks upon arrival at Newark.

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YOUR FUTURE... and COMMERCIAL AVIATION

What of your future?
You may have already decided...

Perhaps you are one of the many thousands of men whose imaginations have been captured by the spectacular achievements of commercial aviation... by the performances of huge transport planes which daily wing their way back and forth across these United States with safety, comfort and speed that even three short years ago would have seemed miraculous. Maybe you have the vision to see that the crossing of the Continent by giant airliners with luxurious ease in sixteen hours, or less, many times daily...

The carrying of a million air passengers in forty-two million miles of flying in this country alone in 1935...

The spanning of the mighty Pacific in sixty hours by the epoch making Clipper ships...

The daily scheduled crossing of the North Atlantic, which, Igor I. Sikorsky says, is now at hand...

And the circling of the entire globe by commercial planes in scheduled service...

Perhaps you look on all these things, not as the ultimate of achievement in aviation but only as a beginning, as an idex to the tremendous expansion which, competent authorities agree, the years just ahead will witness.

You may have already decided that you want *your future* to be identified with that of aviation...

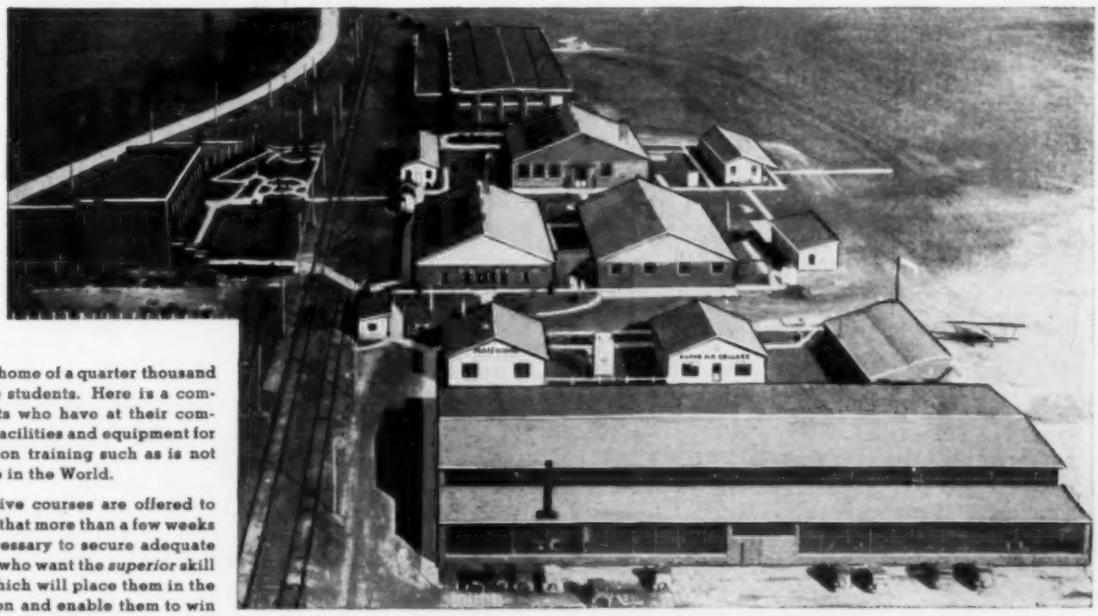
That you want to help build to towering proportions this new transporation service which is making obsoloto slow surface travel, and so win for yourself enviable recognition and rewards.

If so, there will be an excellent place for you, an active demand for your services in the piloting, manufacturing, maintenanco, engineering or administrative field. The growth of aviation, and the serious shortage of qualified men which has already developed, assure you of that.

But of course, you must be prepared. You must secure the training necessary to make you of value in the field you select. This is where Parks Air College can be of service to you. Parks training, which has already meant success for hundreds of graduates, is available to you, too.

SEND FOR THE CATALOG

You will want to learn all about it—about the curricula, personnel and equipment which, for more than eight years, have commended Parks Air College to men like yourself and have made Parks graduates the preferred men in aviation.



This is the school home of a quarter thousand Parks Air College students. Here is a community of students who have at their command an array of facilities and equipment for commercial aviation training such as is not equaled anywhere in the World.

Here comprehensive courses are offered to those who realize that more than a few weeks or months are necessary to secure adequate training—to those who want the *superior* skill and knowledge which will place them in the front of competition and enable them to win the race for the coveted positions in the years ahead.

It is from this institution that graduates have gone to take their places with air line operators and manufacturers in all parts of the World. These graduates have so proven their worth that executives, keenly alive to the fact that future expansion will require a large number of high calibre men, keep asking for more graduates, often more than are available.

If you want to enter aviation and if you are much in earnest in your purpose to climb above the average, then you, too, will be welcome in this school community.

Fill out and mail the coupon now for your copy of the Parks Air College catalog. It includes the information you want. Your coupon will bring it promptly.

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- ☐ Executive Course

Editorials and Comments

A Memorial to Wiley?

THE citizens of the United States did a magnificent job towards subscribing funds for a memorial to the immortal Will Rogers. The hundreds of thousands of dollars that poured in from every channel of human life significantly expressed in a tangible way the strong love of a nation for a great humanist. Everyone knew Will. That is why the fund raising program for his memorial is unparalleled.

The great rank and file did not know Wiley Post so well. They had read of his exploits, his aerial conquests and of his technical experiments. His admirers were legion but his intimates were those closely akin to or associated with flight.

So, to adequately perpetuate the name of Wiley Post—to appropriately construct a memorial to a great flyer—is the responsibility of American aviation.

Late last November the N. A., A. under the able leadership of Senator Wm. Gibbs McAdoo, took affairs in hand and negotiated with various aviation leaders, representative of the industry, to determine what course to pursue for a Wiley Post Memorial. As yet no organization plans have emanated from the executive committee. Time goes on; and although the heavy loss of two valuable men such as Wiley and Will cannot be forgotten, yet must we admit the dimming process that inevitably sets in.

The Will Rogers memorial was a success because of its timeliness. It was immediate. Leaders in every city and community went into action under the guidance of centralized organization of responsible men and friends of Will.

Further delay will prove fatal to any national movement that seeks to perpetuate the memory of Wiley Post. The southwestern states in particular cannot sit idly by and forget one of the outstanding aeronauts of all times, a man who climbed up to the top of the ladder from the lowest rung through sheer ability, perseverance and his love of flight. And no matter whether the memorial to that man takes on the form of a foundation for aeronautical research, scholarships in aeronautical engineering for deserving youths or appropriations for carrying on Wiley's unfinished stratosphere experiments, American aviation cannot conscientiously drop the issue.

State Air Authorities

AT the present time 33 states in the nation have permanent aeronautic commissions, boards or other existing departments of the state government specifically charged with administration and promotion of aviation. Of these 33 states, 26 have special agencies dealing exclusively with aeronautics. The remaining 7 states deal with aviation through departments quite foreign and unrelated to the subjects often included in the responsibility.

In the past few years of extensive Federal appropriations we have observed with interest the fruits of intelligently operated state aviation commissions, particularly in those cases where commissions or state directors do not receive salaries supported by unnecessary taxation on aeronautical goods and activity.

Departments of the state government specifically charged with the responsibility of representing the state in every phase of air administration can do much in the development of the use of aircraft provided that politics and regulatory powers do not enter into the picture. It is generally admitted that the function of state aviation bodies should be limited to the promotion of aeronautical activity and the development of facilities to take care of present needs, and to build for future expansion.

Traffic Control

THE consistent upswing in passenger, mail and express business on our domestic airlines has resulted in large orders for new transport equipment and the addition of new schedules to the already heavily traveled airways. Added to scheduled air transport traffic is the healthy increase in private flying activity. Consequently a new problem for early solution has made itself apparent, although there have been no mid-air collisions or serious trouble from present operations on airports to force immediate attention.

The Bureau of Air Commerce is to be congratulated on its efficacious and timely interest in the growing need for proper regulation and control of air traffic, to the end that air transportation will not be cursed by the same ghost that hovers over the highways and wipes out 35,000 citizens annually.

Guest Editorial

Future Development in Aircraft

By LEIGHTON W. ROGERS

EVERY investigating body, whether from the Government services, the industry or the scientific institutions concerned with aeronautical development agree that progress in the future as in the past, will be in direct proportion to the amount of effort devoted to it.

No experienced person will attempt to place any limitation on future development.

There has been an increase of more than 200 per cent in the speed of aircraft since the World War.

During the next few years, with present knowledge and constant improvement, the top speed of military aircraft should increase by at least 30 per cent, bringing sea level speeds to about 300 miles an hour and speeds at altitude to about 375 miles an hour.

Fighting planes should be capable of operations at 40,000 feet, bombers at approximately 30,000 feet; and they should be practically invulnerable from the surface.

Developments in speed and service ceiling should be accompanied by longer cruising range with heavier loads, the objective being non-stop cruising ranges up to 5,000 miles under certain conditions.

All engineers admit the possibility of something new being developed which will materially quicken progress in performance of aircraft.

The present trend in all metal construction will lead to much greater developments in performance, reliability and durability. New metals and alloys and improved processes of fabrication promise to further improve construction beyond present limitations.

Constant improvement in aircraft engines, developing greater horsepower for each pound of weight and fuel loads, will make practicable machines of increasing size.

The idea of huge commercial transports, troop carriers and fighting craft capable of operating in fleets within a radius of thousands of miles is no longer considered visionary.

LEIGHTON W. ROGERS
President, Aeronautical Chamber of Commerce

The recognized superiority of American airplanes, evidenced by the desire of other nations to buy them—or to imitate them—whenever possible, has been brought about by costly technical research and development on the part of the aircraft manufacturing industry in the United States, with the cooperation of the National Advisory Committee for Aeronautics, the Army, the Navy and the Department of Commerce.

Speed, performance and dependability are the attributes of American planes which provide the continuously improved service on the airlines, stimulate the growing market for privately owned machines and assure efficient equipment for the air forces. But great as that development has been in recent years, it has not yet become static.

The need for constant, steady improvement is an ever-present need. It follows the air line operator throughout his struggle to improve his service and increase his traffic. It is an axiom among air forces the world over that in an emergency they cannot have enough up-to-date machines. The best that they can do is to have the facilities for turning out airplanes at least the equal, if not superior, of those thrown against them by an enemy. That requires constant development of machines embodying all that can be learned at the time about aero-dynamics and new methods of construction. It is a situation that must continue to exist until the science of making flying machines becomes so nearly perfect that it can be standardized. When that will be nobody knows.

The technicians say that they are only beginning to learn and recognize the vast number of problems remaining to be solved. Progress then must continue, progress in design, progress in construction, in the use of new materials, new auxiliaries—all to meet the increasingly heavy demand for greater performance. For that reason the design and construction branches are the heart and soul of aviation.

Yet those branches of aviation are the least understood. The amazing flying achievements which occur almost daily and range from thrilling adventures in the far corners of the earth to the steadily quickened pace of air line service over land and sea—they stand forth in the spotlight, while the cautious, plodding work of the scientist, the engineer and the designer remains far in the background. One aviator may fly a machine to immediate and lasting fame but 50 different professions and trades, and hundreds of allied industries using a thousand different materials, must work for two or three years to make that machine possible.

The intricate, complicated processes by which airplanes are developed present various problems, aerodynamic, structural and economical. They confront the American aircraft industry in its unceasing efforts to make progress and keep the United States abreast of other nations in the air.

Aircraft Plotters

A navigation aid brought up to date

By LT. COMDR. P. V. H. WEEMS (Ret.)

CHART navigation requires two principal operations:

I. Laying courses.

II. Measuring distances.

In the past, protractors, parallel rulers and dividers have been used to accomplish these operations. For air navigators one device, combining the functions of dividers, protractor and parallel rulers is needed.

Since the World War, parallel rulers have been largely replaced by the drafting machines in naval vessels. Small, specially designed drafting machines have also been and are being used in large planes with ample space for navigation equipment.

The more common practices, however, have been to use special transparent plotters for laying courses and measuring distances. At first, ordinary commercial protractors with hand-made distance scales were used. In 1928, the Hydrographic Office published the Aircraft Plotter, VP-10, (Fig. 1) which has the features of the Mooring Board printed on an 8-inch sheet of transparent celluloid. While meeting with general approval, VP-10 suffered from one little-noted defect—the fact that in many cases the directions and distances, while plainly visible on the plotter, could not conveniently be plotted on the chart.

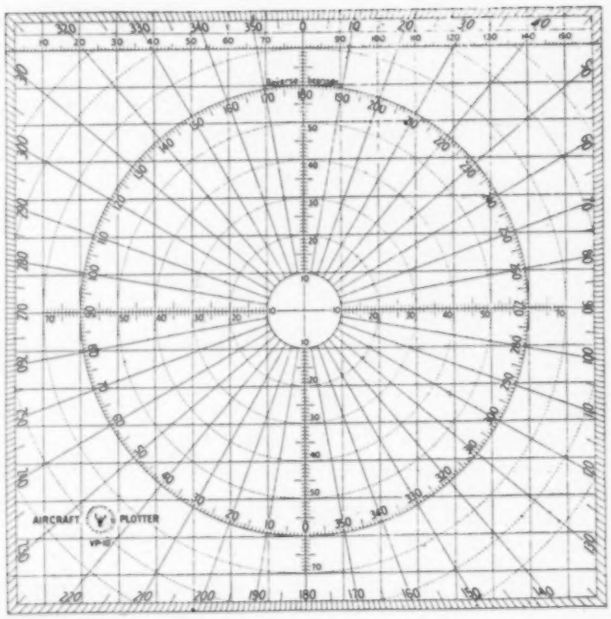
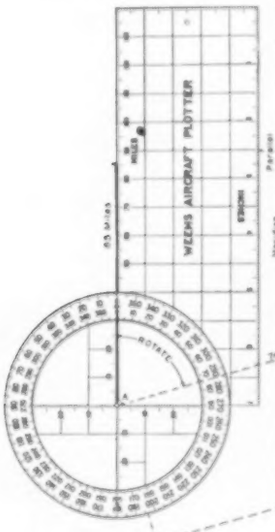


Fig. 1

Aircraft plotter VP-10, published by the Hydrographic Office in 1928

Fig. 2

Aircraft plotter VP-11, published in 1932 and designed by the author.



In 1932, Aircraft Plotter VP-11 (Fig. 2), designed by the writer, was published by the Hydrographic Office. The scale of this type plotter conforms to the scale of the VP-Mercator Plotting Sheets, and to the scale of the Universal Plotting Sheet, VP-O, both published by the Hydrographic Office. The special features of this type plotter are that any angle may be plotted conveniently on the chart, and that distances may be measured from the center of the plotter placed over the starting point along the course line for scale 20 miles to the inch.

The adoption of the 1:1,000,000 scales for the new Department of Commerce Sectional and Regional Charts, and their construction on the Lambert projection necessitated a re-design of Aircraft Plotter VP-11.

The Department of Commerce Type Aircraft Plotter, designated as Aircraft Plotter Mark II, was designed for the purpose, and especially for use with the Department of Commerce Maps, using scales 1:1,500,000 and 1:1,000,000.

THE new sectional maps are constructed on the Lambert projection with the latitude lines appearing as arcs of circles, and longitude lines which converge toward the poles. Since the meridians are not parallel, and since a compass course cuts successive meridians at the same angle, course angles, to be exact, must be measured from the local meridians. For example, in Fig. 3, it is clearly shown that the course angle at the starting point is smaller than the course angle at the destination.

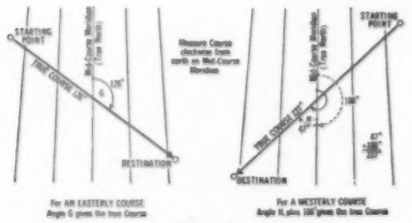


Fig. 3

The course angle at the starting point is smaller than the course angle at the destination

The VP-11 type plotter was designed for use with the Mercator chart on which the meridians are parallel. In that type the courses are measured from any meridian, and the distances are measured from the center along a distance scale extending in one direction only. For practical purpose, the mid-meridian course is used on the Lambert project map, this course being the average course. Captain L. O. Colbert, Commander K. T. Adams and Mr. T. C. Lyon of the U. S. Coast and Geodetic Survey suggested that the plotter be re-designed so that the course may be measured conveniently at the mid-meridian. In addition to

suggesting the changes the personnel of the U. S. Coast and Geodetic Survey assisted in designing and prepared the drawings for the new type plotter.

On the sectional air maps the meridians converge as shown in Fig. 3. Since the compass course cuts successive meridians at the same angle, it is obvious that a course measured at the starting point in Fig. 3 would not be correct for the entire distance to the destination. However, the *average* course for the entire distance may be measured at the mid-meridian, and the Mark II plotter conveniently measures the mid-meridian course, as well as the distance, as shown in Fig. 5.

The Mark II plotter is so designed that when the protractor edge lies along the course or bearing the angle may be read from the mid-meridian directly above the center of the plotter. If meridians are not shown on the map, the north reference point must first be determined by orienting the plotter at right angles to the latitude lines.

FIG. 5 shows the plotter in the normal position for measuring east-west courses and distances. The outer semi-circle is used for easterly courses and the inner semi-circle for westerly courses. To facilitate measuring distances along the course, the distance scale on the protractor side of the plotetr has zero at the center with distance scales extending in both directions along the course line. Since it now appears that the international millionth scale will be the one most used in the future, this scale is placed nearest the edge. For use with the 1:500,000 scale maps, a separate scale for these maps is placed inside the 1:1,000,000.

In most cases the navigator connects the points of departure and destination with a course-line on the map. This shows the towns and other landmarks the plane should pass over or near. The principal use of the plotter is to measure the courses and distances along the course-line.

INSTRUCTIONS FOR USE

To measure a course: Fig. 5.

(a) Place the distance scale along the course-line with the center over the mid-meridian. A pencil-point held on the course-line helps to do this.

(b) Read easterly courses on outer semi-circle, and westerly courses on inner semi-circle.

To lay a course: Fig. 4.

(a) Place the center of the plotter over the starting point, with the distance scale to North, orienting till the plotter is parallel to nearest meridian or perpendicular to parellels of latitude.

(b) Mark the north point.

(c) Rotate the plotter to right, with a pencil-point as a pivot, till the desired easterly (westerly) course is indicated on outer (inner) semi-circle.

(d) Draw course-line along distance scale.

To measure distance: Fig. 5.

(a) Note the scale on the map and choose the proper scale on the plotter.

(b) Place the straight edge along the course-line with zero over the starting point.

(c) Read the distance in miles directly from the proper scale, or read the distances from the mid-meridian to starting point and to the destination point and take the sum.

To parallel any line: Fig. 4.

(a) Align the parallel lines of the plotter with the original line AB and at the desired distance from it.

(b) Mark a line CD along the straight edge of the plotter.

The plotter is used in the same way with Mercator charts, except the courses may be measured from any meridian, and the distance shown by the plotter is referred to the latitude scale at the mid-latitude to get the correct distance in nautical miles.

For plotting lines of positions and for any work requiring a small area Mercator Plotting Sheet, the Universal Plotting Sheet, VP-0, has been increased in scale from 20 miles to an inch to approximately 16 miles to an inch to conform to the Mark II Plotter.

Bearings from or to any point, wind problems and in general all chart problems may be accomplished with this type plotter, by following the same procedure as outlined above for each step.

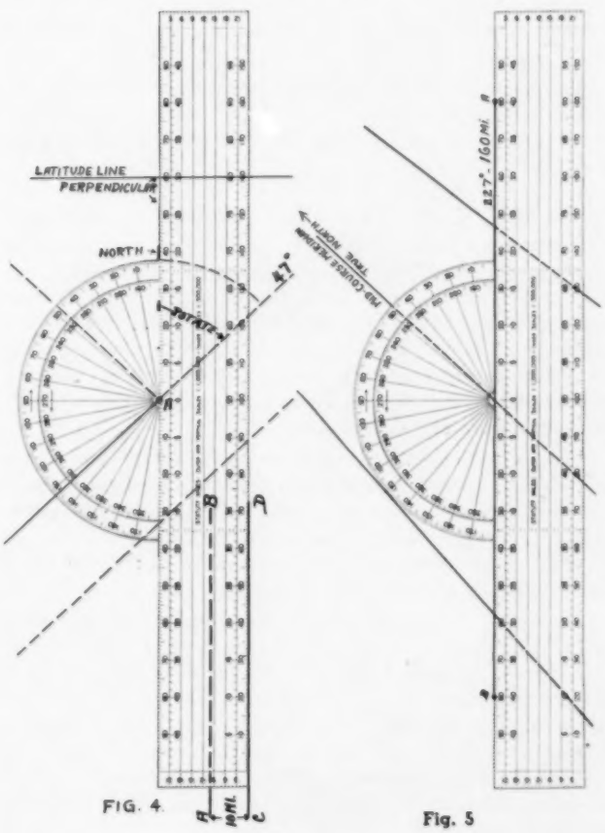


FIG. 4

Fig. 5

Meet The Colonel

No "Czar" is he—but a business executive prepared to face scheduled air transport's problems and direct their solution.

By GEORGE E. HADDAWAY

WHEN, for the first time, you meet Col. Edgar S. Gorrell, you are immediately aware of two exceptional traits—an unbounded enthusiasm and plain old common horse sense—a happy and necessary combination of personal attributes for the man who captains the newly formed Air Transport Association, the trade body of domestic airlines, now unhampered by affiliation with any other branch of U. S. aviation.

The new trade organization of the air transport industry could have searched the wide world over and not have found a man more suited to the task—the cooperative job that promotes and develops the business of air transportation to the end that the best interests of the public and members of the association are served. It's a job that includes the promotion of harmonious and cordial relations among individual air lines, that advocates the enactment of just and proper laws governing the business, that seeks the construction and improvement of facilities, in short, that does everything in its power to best serve the interest and welfare of *every* scheduled air line in the United States and the public at large. That is a pretty big order for any organization and one that requires an experienced executive and aeronaut to pilot the craft through fair and stormy weather.

Let us look into the Colonel's log book and consider the credentials which make him the one man in the United States for the job. An abbreviated biography will support our tenet.

EDGAR S. GORRELL was born in Baltimore in the early nineties. His preliminary education was received through the public schools of Baltimore. After his graduation therefrom, he entered the Baltimore City College in September, 1904. He would have graduated from the Baltimore City College in 1908 but for the fact that he passed the entrance examination for the U. S. Military Academy at West Point, New York, in December, 1907, and entered in February, 1908.

At the Military Academy he participated in most forms of athletics and was broadswords champion of the Academy. He held cadet positions as corporal, sergeant-major, lieutenant and captain. Upon graduation in June, 1912, he was captain of C Company and was graduated in the first third of his class in scholastic standing.

Following the usual custom, members of his class were allowed to choose the branch of service they most desired. Mr. Gorrell elected aviation, but the regulations at that time required two years' service as an officer of the ground army prior to entrance into aerial service. He, therefore, chose the infantry and served with L Company, 30th Infantry, at Fort Seward, Alaska, from September, 1912, to July, 1914, at which time his regiment was transferred to San Francisco.

After serving as Lieutenant in Company L and also as Battalion Adjutant and Post Exchange Officer from July, 1914, to December, 1914, Gorrell was transferred to the Army Air Service (which at that time was called the Aviation Section of the Signal Corps) and stationed at Coronado, California. At that time the entire activities of the Aviation Signal Corps were concentrated at this one point, where flying instruction and all other forms of flying were conducted.

Gorrell learned to fly in 1914. He was Adjutant of the Air Service Activities at this point and engaged in all forms of aerial activities known to the army at that time.

He probably will never forget the first tests made on parachutes. It seemed as if the parachute was sufficiently developed to warrant tests by human beings and Gorrell volunteered to be the first army officer to jump from an airplane in the experimental parachute tests. Luckily the commanding officer decided to make one more test with a sand bag instead of a human being. The parachute never opened and the sand bag broke into numerous pieces.

IN JANUARY, 1916, Lt. Gorrell moved to San Antonio, and joined the First Aero Squadron, the first aerial squadron ever to operate with the U. S. Army troops.

In March, 1916, after the Mexican bandit, Villa, had raided Columbus, New Mexico, the First Aero Squadron was ordered from San Antonio to Columbus, to participate in the activities in the Punitive Expedition under General Pershing. During his service in Northern Mexico, Gorrell was Adjutant of the Aero Squadron, as well as Supply Officer and participated constantly in the aerial activities against the Mexican bandits.

It was on one of these aerial reconnaissances that Lieutenant Dargue and Lieutenant Gorrell captured the American Record for non-stop cross-country flying.

At the end of the Punitive Expedition (September 1916) Gorrell was detailed to the Massachusetts Institute of Technology to take a post-graduate course in aeronautical engineering, with a view to getting his Degree of Master of Science. He finished the year's course at M.I.T. before Christmas, 1916, devoting the time after Christmas to study over and above the regular curriculum.

On the declaration of war in April, 1917, all army officers received new orders and Gorrell left the Massachusetts Institute of Technology reaching Washington on the evening that war was declared against Germany. He here served in the office of the Chief Signal Officer, taking an active part in laying all the plans for America's participation in the air against Germany and for the defense of this country, as well as all its possessions, from aerial or submarine attacks. In June, 1917, he was sent by President Wilson, as a member of a mission, to visit the allied countries to determine what aerial material should be built in the United States and what bought in Europe for use of the American Expeditionary Forces. At this time Gorrell (then a captain) was one of three aeronautical engineers in the U. S. A.

Landing in Europe in June, 1917, this mission, which was officially called the "Bolling Mission," visited the allied

countries and by August was able to make a complete report and recommendation as to all engineering and production phases contemplated for our future aerial activities. To the astonishment of everybody, this report received the unanimous endorsement of the Air Service Headquarters of each of England, France and Italy. It was one of the few cases in the war where commercial strife between these three countries was temporarily set aside in favor of the combined opinion as recommended by the Bolling Mission.

On August 1, 1917, General Pershing retained Captain Gorrell in Europe as Chief Engineer Officer of the Air Service, A. E. F. The other members of the Mission, with the exception of Colonel Bolling, returned to the United States. During August and September, 1917, Gorrell, practically unaided, handled all the engineering activities of the Air Service, A. E. F.

COLONEL EDGAR S. GORRELL

President, Air Transport Association

Repeated requests, cablegrams, letters and activities of all kinds failed to pry loose from the United States the brains that were so badly needed to assist in this work, so Gorrell carried on alone.

During this period he bought something greater than $77,000,000 worth of material of all kinds, including airplanes, engines, radios, guns, pyrotechnics, buildings and practically every conceivable thing that an air force needs. It was this material, bought during that time, that finally reached the front lines in time to be of use before the war ended.

During this time and also after the Armistice, he represented the United States in something over two hundred international conferences, wherein there were represented from three to twenty-three nations.

FROM November 24, 1917 until February 3, 1918, he acted as Assistant Chief of Staff of the Air Service, A. E. F., and on February 3, 1918, (having been the man who laid the groundwork for all activities of our Air Service) he was transferred by General Pershing to the Operations Section of the General Staff of the A. E. F., and there handled all aerial strategy and all aerial matters that actually arose toward the synchronization of aerial activities with the rest of the army throughout the remainder of the war.

So Gorrell had the novel experience of first laying the fundamental plans for the future use of the Air Force before it actually existed, then going to G. H. Q. and actually directing aerial strategy after the fighting units came into being and were moved to the front.

Due to his inside knowledge of what was contemplated, then attempted and finally accomplished, Gorrell probably got a better insight into the hopes, anticipations, attempts and accomplishments of our Army Forces in Europe than most any other American that went to Europe.

Combining with this the fact that he represented the United States in many international conferences, that he participated in the campaigns of all five fronts during the war and was actually present at nearly every major battle from July, 1917 to the end of the war, it may be said that Gorrell probably has a better knowledge of what really was intended to happen and what really did happen than any man now living in America, with the possible exception of a half dozen persons.

Towards the end of the war, Gorrell was made Chief of Staff of the Air Service, A. E. F., with rank of Colonel, and finally when the war was over, he represented the United States in a number of conferences during the Peace Conference and at the International Convention on Aerial Navigation. This International Convention sat simultaneously with the sitting of the Peace Conference. It was signed by 23 nations and has since been adopted by most of the larger nations on this earth.

FOR distinguished service with the American Expeditionary Forces in France, Mr. Gorrell was awarded the American Distinguished Service Medal. The British Government awarded him the British Distinguished Service Order for meritorious service in the Allied cause during the World War and for similar services, the French Government awarded him the Legion of Honor.

For service with the Punitive Expedition in Mexico, Mr. Gorrell was awarded the "Mexican Punitive Expedition" medal of the United States and for service during the World War was awarded the "Victory Medal."

Returning from Europe after the Peace Treaty was signed, Gorrell arrived in Washington in July, 1919, and was assigned first to the Air Service in Washington and then almost immediately transferred to the Operations Section, General Staff, War Department, Washington, D. C.

He remained there until March, 1920, at which time he resigned from the army and joined the Nordyke and Marmon Company. In November, 1920, he went to California for this same company and there handled certain of their activities, including the managing of a

(Continued on Page 30)

WASHINGTON

HARRIS B. HULL

The Durand Report And New Navy Equipment

CHRISTMAS was late this year at the Navy Department. But the important thing is that the Admirals had a Christmas. The pilots with the fleet will get 114 Torpedo Bombers to be built by Douglas. Capt. Arthur B. Cook was named as the new Chief of the Bureau of Aeronautics. And reasonable assurance was advanced that another airship will be built in the future to replace the ill-fated Akron and Macon.

Most important, of course, is the recommendation of the Durand Committee of eminent scientists that the Navy's airship program should get off to a fresh start with the construction of a "flying laboratory." "We believe it is practicable to design, construct and operate airships with a reasonable assurance of safety," the board of authorities wrote.

These far-reaching findings were handed to Secretary Swanson by the board of scientists, which included such outstanding names as William F. Durand, Alfred de Forest, William Hovgaard, Frank B. Jewett, Theodor von Karman, Charles Kettering, Stephen Timoshenko and R. A. Millikan.

A great deal of discussion, much of it intemperate, will be provoked by the report of the science committee. Critics of the airship program will wag their heads ominously as they point to the Shenandoah, the Akron and Macon. Supporters will hail the findings as the only logical conclusion that could be reached by such an impartial committee.

Any person who will turn for a moment from the heat of argument and consider the question carefully will agree that there is much to be said on both sides.

One of the many things involved is this: Are we trying to develop the airship as an instrument of warfare or are we trying to investigate its commercial possibilities? And if it is the commercial field in which we are interested, then why does a military organization carry out the program?

Columns might be written on this discussion, which would only reflect the opinion of the writer. The important thing here is that seven of America's leading scientific minds have been working on this subject for ten months. It is more important then to turn to the findings of these distinguished gentlemen who it must be admitted comprise the first disinterested civilian board of any consequence to consider this most important aviation problem. Instead of criticizing, let us study what this board of outstanding men actually found.

The construction of dirigibles capable of serving as aircraft carriers is feasible, according to the Durand report. In addition to this major finding, the committee criticized the Navy for its method of lighter-than-air craft operation in the past.

The group recommended that the first large airship built to replace the ill-fated Akron and Macon should not be operated as a part of the United States Fleet, but should be considered as a flying laboratory or flying training ship to test the equipment and to train naval officers to become expert airship captains.

Certain scientific advances, achieved since the completion of the Akron and the Macon, were cited by the investigators.

Experience and new knowledge in mechanics, aerodynamics and meterology were put forward by the members of the board in urging that America join with Dr. Hugo Eckener and Germany in a continuation of lighter-than-air activity, rather than go along with France and Great Britain, both of whom have abandoned dirigibles as "costly experiments."

The committee of scientists making the report, which may fashion the future of American airship policy, was called in a year ago following the destruction of the Macon off Point Sur, Calif.

Its personnel was named by the science advisory board of the National Academy of Sciences.

Asked by Secretary Swanson "to review and analyze the past and present situation as to the design and construction of airships and to make recommendations as to their future design and construction," the seven-man committee came to the conclusion that "the best interests of the services in which airships give promise of useful and effective service, both commercial and naval, require a continuing program of construction and use."

Secretary Swanson refused to comment on the findings. However, with the report of the science advisory board's committee to back them up, it is probable that members of the Navy high command will draft a new airship program and will ask Congress for funds to start construction.

Opinion as to the practicability of continuing the airship program is sharply divided on Capitol Hill. However, the fact that seven eminent scientists signed the Durand report is certain to carry weight with members of Congress who have debated the question with naval officers for several years.

Representative Carl Vinson (Democrat), Georgia, chairman of the House Naval Affairs Committee, which will take early action on the report, already has indicated that it probably would receive a sympathetic reception before his committee.

"Some governmental activity should be carried on to

determine the feasibility of airships from a commercial if not a military viewpoint," Vinson has said.

"I don't think because we have had a series of accidents that we necessarily should discontinue the airship-construction program.

"I am inclined to think that the dirigibles have a greater commercial than military value, but this is a subject which must be further explored."

The committee's findings constituted a "report of progress relating to the basic question of practicability." Subsequent reports of a more technical nature will be forwarded to the Navy Department in the future.

Touching on commercial aspects of airship operation, the committee referred to the successful use of the Graf Zeppelin by German interests.

"We recognize the possibility of effective service for of various sizes, small, medium or large, according to the various traffic requirements," the members said.

"Demonstration of such service in recent years is given by the Graf Zeppelin of the Luftschiffbau-Zeppelin, and is further indicated by the continuing policy of this company as evidenced not only by their construction of the LZ 129, now approaching her trial tests, but also their announced intention of building additional ships."

In connection with the forthcoming flight of the LZ-129 across the Atlantic, Swanson announced that the Navy would grant the use of mooring facilities at Lakehurst, N. J., and Miami, Fla., to Dr. Hugo Eckener, who is expected to command the big ship on her first crossing in May or June. In return for this courtesy it is assumed that a Navy officer will be invited to make the trip as an "observer."

Taking up the matter of airship safety, in an effort to answer this question: "Can a reasonably safe and useful airship be designed, constructed and operated?" the members of the committee commented that "nothing is entirely safe."

"Railway travel has its accidents and casualties, surface ships are wrecked, airplanes crash and the automobile, including errors of operation, is perhaps the most unsafe of all modern agencies of transport. Yet in the face of these all-too-familiar occurrences, we do not contemplate giving up any of these means of transport," the committee said.

"All development of a new form of transport, and more broadly all new developments, are subject to possible hazards.

"This has been true in marked degree with the airplane, the heavier-than-air form of air transport. We have, however, accepted these hazards and casualties as a part of the price which must be paid for all such steps forward."

Concluding the general discussion of airship safety the committee found: "With the lessons which have been drawn, and with the general advance in our understanding of the problems, the probability of a repetition of such casualties under like conditions, should, for future construction, be reduced to a point which, if not vanishing entirely, may be considered as acceptable in comparison with the promise of useful service."

Touching on the operation of the smaller type of airship as contrasted to the Akron and the Macon the committee wrote:

"We consider the entire record of the service of small non-rigid and of rigid airships of moderate size, in convoy and patrol services, during the great war and elsewhere, as warranting the assertion that safe and useful ships of these types and sizes can be designed, constructed and operated."

Then turning to airships of "the largest size, such as the Akron," the committee said that it "is prepared to give likewise an answer in the affirmative, as to the practicability of a safe and useful airship, but under general conditions."

Six general conditions then were outlined touching on such points as: "Design in the light of world experience and recent studies; supervised construction and operation by trained personnel, and the continuance of a co-operative study by builder and owner over a period of time sufficient to permit the taking of strain gauge readings and the technical analysis of performance."

With the exception of the latter the committee's investigation found that all of these general conditions had been met in the design and construction of the Akron and the Macon.

"The history of the trial runs, however, shows that condition five was not adequately met," the committee reported.

This condition, on which the scientists say they are willing to recommend a continuation of an airship program, was stated in the report in this manner:

"On the completion of the structure itself, opportunity for operation under some co-operative arrangement between builder and owner, over a period of time sufficient to permit the taking of strain gauge readings at all critical points of the structure and other technical observations under progressively more and more exacting conditions up to and including conditions approaching the most severe to be anticipated.

"Such period of test should not be curtailed or hurried. It is of vital and fundamental importance. It will, furthermore, give opportunity for the development and correction of many matters, important or otherwise, which may always be expected when a new design first takes the air."

Following this criticism of naval policy, the committee stated that, "We recommend most strongly that the first large airship built under such a program should, at least for a time, be considered not an adjunct to the fleet but rather a flying laboratory or flying training ship, not only for extensive technical observations of the structure under operating conditions, but also for enlarging our knowledge regarding the best conditions of service for such vessels, and, as well, for giving opportunity for the training of officers and crew in the technique of handling airships under all conditions of weather and service."

Monoplanes for the Carriers

CONSTRUCTED as monoplanes, the new dive bombers ordered by the Navy will replace obsolete equipment now being flown from the decks of present carriers and will be used to build up the flying units on the Yorktown and Enterprise when these vessels are completed and added to the fleet.

The cost of $3,636,000 for the 114 ships does not include the cost of the engines which will be purchased later.

"The TBD type Torpedo-Bomber is a new type of low wing monoplane construction," officials at the Navy Department said.

"It will have markedly greater speed, considerably greater range, as well as many other improved characteristics of performance over previous types of this class used on carriers."

The new single-engined ships will carry a crew of three.

This order marked the biggest step taken in months to build up the naval aviation units to a total of 1,910 planes as allowed under present treaties.

At the present time the Navy has about 1,000 planes with 472 on order, not counting the new fleet of Douglas dive bombers. Manufacturers now are delivering six ships a week to naval aviation units.

Captain Cook

ARTHUR B. COOK, the newly appointed chief of the Bureau of Aeronautics, was born in Evansville, Indiana, 54 years ago. He went to the Naval Academy in 1901.

During the World War he won a special letter of commendation from the Navy Department for his service as Flag Lieutenant and Fleet Signal Officer on the staff of the commander in chief of the United States Fleet.

Not until 1928 did he qualify as a naval aviator. After winning his wings at age of 47 he took over the command of the aircraft carrier Langley, later joining the staff of the commander of the aircraft squadrons of the battle fleet.

In 1931 he served as chief of staff to the commander of aircraft of the battle force. From 1931 to 1934 he was assistant chief of the Bureau of Aeronautics and since June, 1934, has been in command of the Lexington.

While serving as chief of the Bureau he will rank as a Rear Admiral, although his permanent rank is that of a Captain.

It also was stated at the Navy Department that Commander Alfred Montgomery, commanding officer of the Naval Air Station at Anacostia, D. C., will go to duty on the staff of the commander of aircraft of the battle force. Lieut. Commander Knefler McGinnis, well-known Navy long distance pilot, will be in charge of the Anacostia station until spring.

German Callers

A GERMAN aviation mission is scheduled to arrive here in Washington early in February to discuss possible transatlantic air service between the United States and Germany.

The three-man delegation will confer with the American Interdepartmental Committee on Civil International Aviation, headed by Assistant Secretary of State W. Walton Moore.

Tentative arrangements recently were completed with British, Irish, and Canadian officials for the establishment of a transatlantic service between the United States and Great Britain by way of Canada, New Foundland and Ireland, with an alternate route by way of Bermuda.

The German delegation will be composed of permanent secretary Fisch, chief of the General Air Office, in the Reich Air Navigation Ministry; M. Wronsky, manager of the German Lufthansa Air Lines and a representative of the German Ministry of Posts.

Simultaneously the Navy stated it had granted permission to Dr. Hugo Eckener for the use of mooring facilities at Lakehurst, N. J., and at Miami, Fla., for the projected transatlantic flight this summer of the German airship LZ129. It is expected that this trip will be made in May or June.

General Mitchell

MEMBERS of a House Committee have refused to place Brig. Gen. William Mitchell, one time "stormy petrel" of the Air Service, back on the retired list of the Army.

The Military Affairs Committee voted late last month against reporting out a bill which would have put him on the retired list as a Colonel and thus eligible to draw $4,350 a year.

Mitchell resigned in 1926 after 28 years service when a court martial sentenced him to suspension from rank on half pay for five years after a trial for conduct prejudicing military discipline.

Old 999

HENRY FORD may re-enter the "flivver airplane" business. Officials at the Bureau of Air Commerce confirmed last month that a license for an experimental ship has been issued to the automobile magnate who quit aircraft manufacturing in 1931.

According to word from Detroit the new Ford air flivver carries two people and is constructed as a cabin monoplane. The cruising range of the little ship, which is powered with a standard V-8 engine, is estimated at more than 500 miles.

Melvin Perrin, Government inspector who licensed the plane, said that the number X-999-E had been assigned to the flivver in commemoration of the famous Ford racing car 999 in which Barney Oldfield raced for Ford.

Construction of the new Ford aerial flivver marks a renewal of the company's activity in this field after a lapse of 10 years.

Ford built a small ship in 1926, which was improved and later abandoned as a "premature" development. In 1928 Harry Brooks, Ford test pilot, was killed in a crash off the coast of Florida in one of the company's planes.

Three years later Ford stopped manufacturing the famous all-metal tri-motored transport bearing his name, which was used on major airlines throughout the country.

When work on the first of the Ford flivvers of the air was abandoned, the manufacturer was quoted as saying that the engineering problems involved could be solved when public demand justified continuance of the program.

Bureau of Air Commerce officials recently concluded a survey of the private aircraft market which so encouraged them that they are carrying on experiments with half a dozen light "aerial flivvers" of various designs.

New Stamp

POSTMASTER GENERAL JAMES A. FARLEY has announced that a new issue of the 16-cent Air Mail Special Delivery postage stamp printed in two colors will be released early in February.

This will replace the stamp now being used which is printed entirely in blue ink. The border of the new stamp will be red and the central design, which is a reproduction of the Great Seal of the United States, will be blue.

The change is being made so that letters bearing the stamp will be more easily recognized by postal employes.

"Not in The History of The Air Corps"

FIRST LIEUT. ROBERT K. GIOVANNOLI, Army Air Corps, has been named as the winner of the Cheney Award for 1935, according to an announcement at the War Department.

This award, consisting of a plaque, a certificate and a substantial cash prize, is made each year, "to the officer or enlisted man of the Air Corps performing the outstanding act of valor, extreme fortitude, or self-sacrifice in a humanitarian interest in connection with flying."

"Probably not in the entire history of the Air Corps has a more heroic action been recorded," the report of a special board of Air Corps officers found in recommending the award to Giovannoli.

1st Lieut. Robert K. Giovannoli, A. C.

This young officer plunged into the burning wreckage of the "Flying Fortress" when the big ship fell and burned on Oct. 30, and released Maj. Ployer Hill, the pilot and Leslie Power, Boeing's crack test pilot, both of whom were trapped.

After first extricating Tower, Giovannoli returned and, according to official War Department records, "In spite of the fact that the metal sides were hot enough to burn one's hand, the heat and smoke practically unbearable, and with the knowledge that additional fuel tank explosions might occur at any moment, he entered the compartment through the window and began the task of releasing Maj. Hill.

"With only the aid of a blanket about his head he worked with seemingly superhuman energy for a period estimated at between four and five minutes. He succeeded in cutting loose with a pocket knife the pilot's shoe, which had become wedged in the wreckage and then raised the pilot and passed him through the window to waiting hands."

In further recognition of this heroic act the employes of Boeing Aircraft Company sent a testimonial scroll to the Secretary of War.

Every employe of this organization signed the testimonial officially thanking Secretary Dern and Maj. Gen. Westover for the valiant attempt of Lieut. Giovannoli and Lieut. Leonard Harman, who assisted in the rescue, in their efforts to save Leslie Tower, Boeing's never-to-be-forgotten first pilot.

"His own escape from a perilous position in which he suffered serious and painful burns was considered miraculous. Maj. Hill, the pilot, died several hours later and Mr. Tower several days later, after complete recovery had seemed assured."

Lieut. Giovannoli is 32 years of age. He learned to fly at the Air Corps Training Center in 1928 and was commissioned in 1930.

The Cheney award was established in 1927 in memory of First Lieut. William H. Cheney, Air Service, who was killed in an air collision at Foggia, Italy, Jan. 20, 1918.

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PRESIDENT ROOSEVELT last month presented the Herbert Schiff Memorial Trophy to Lieut. Phil Haynes, U. S. N., commander of Training Squadron Two, the Naval Air Station, Pensacola, Fla.

William Schiff

This unit had the best safety record of 61 naval aviation squadrons competing for the trophy, flying a total of 18,699 hours from July 1, 1934, to June 30, 1935.

The trophy, which was presented to the Navy Department in 1925 by Mr. William Schiff, brother of Lieutenant Herbert Schiff, U. S. Naval Reserve, who was killed while on active duty at the Naval Air Station, Norfeld, Virginia, on July 11, 1924, is a silver cup surmounted by an eagle and carrying the outline of a flying boat below. Its award is based upon the greatest number of hours flown, with the maximum of safety. It was the expressed purpose of the donor to stimulate interest in naval flying and at the same time to reduce aviation accidents by stressing the safety feature.

Col. Henry B. Clagett

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PROMOTIONS

Secretary of War Dern has announced the promotions of Col. Henry B. Clagett of the Air Corps to replace Brig. Gen. Henry B. Arnold in command of the First Wing of the General Headquarters Air Force, March Field, Calif. Col. Clagett will rank temporarily as a Brigadier General.

At the same time Secretary Dern stated that Col. Gerald Brant of the Air Corps would become a Brigadier General temporarily while in command of the Third Wing of the GHQ at Barksdale Field, La.

Hedge Hopping The Books

With ORR SINO

AUTHOR'S NOTE—*Everyone knows that all aeronauts, when the day's flying is done, go home, pick up a book to read or study—if they can't find entertainment in other modern channels.*

There might come an evening soon when you would like to settle down for a bit of reading—so here's our new department, where will be reviewed, none too seriously, not only aviation text books but such factual and fictional aeronautical volumes as come to our shelves.

The busy pilot and mechanic has little time to select from the hundreds of books which are published; consequently, it is our modest aim to call the outstanding ones to your attention. We hope you'll like this latest department of the Southwestern Aviation.

A LITTLE aeronautical history wouldn't hurt any of us. We all know that Lindbergh crossed the Atlantic but do you know the exciting story of the real first Atlantic crossing by Alcock and Brown? Or that there had been a nip and tuck race between Langley and the Wright Brothers and that if something had not gone wrong with the launching mechanism of the Langley "Aerodrome" (as he called his airplane,) Langley might have been the first man to fly a heavier-than-air craft, nine days before Orville Wright gained that world famous distinction?

"SKY HIGH" (by Eric Hodgins and F. Alexander Magoun, pub. Little, Brown and Company, $2.75) is not a new book. It was first published in 1929 but it has been recently revised and brought up to date. The new chapters include stratosphere explorations, women in aviation, transatlantic flights, etc. and I have never seen a book in which the history of flight—from Archytas (who constructed a wooden pigeon in the fourth century before Christ) to the new Douglas—was so interestingly presented.

It is no dull book of facts, but a lively written and and entertaining outline of aeronautics. There are nearly a hundred illustrations—sketches, engravings and photographs—and, even if you only like to look at pictures, you will get your money's worth. "Sky High" will help you win bets in some of those hangar arguments; a very fine index in the back will for instance, enable you to locate the names of Amelia Earhart's co-pilots on her first Atlantic hop. The book is complete to the point of covering balloons, dirigibles, gliders, air marathons and polar flights.

THE FLYING FAMILY IN GREENLAND (Lt. Col. George R. Hutchinson, pub. Thomas Y. Crowell Co. $2.00) is a swell book to give that little brother or niece who is always running off with your copy of "Esquire." It is intended as a book for children but I expect that you will borrow it long enough to read the flying portions of it.

The book relates the exploits of the Hutchinson "Flying Family" (familiar on many airports around the United States) on their proposed trip to England which ended, unfortunately, when the ship was crushed between two icebergs after a forced landing because of weather in Greenland.

The nonchalant attitude of the entire family, as expressed in the book, might go a long way towards converting that maiden aunt of yours to aviation. You might try it, anyway. The numerous illustrations are from photographs made on the trip.

I'VE always been a dumb cluck about anything mechanical. How the connecting rods on a radial motor managed to turn around without getting all tangled up was one of life's mysteries to me. But now, I know! In fact, I can sit at home and, no grease no bother, tear a Wright Whirlwind down and put it together again without getting a drop of oil on me. I'm practically an authority on radial motors!

I owe my success to a clever hickey put out by the Popular Mechanics press. Mounted on stiff cardboard is a front and side view of the Whirlwind "300" engine. By lifting up tabs, you can disassemble the engine, step by step, just as you would a real one. It is printed in colors so that the various parts can easily be traced. Each part is numbered and if you are wondering what a certain funny look gadget is or does, merely glance at the number index below and your question is answered. Pretty slick. The outfit costs only a buck and *Southwestern Aviation* will be glad to supply you upon receipt of the dollar.

For anyone who does not have the opportunity of being around a major overhaul—or if the mechanic tells you to "haul" (out) when you pester him—this device will certainly advance your mechanical education at home. Incidentally, the Popular Mechanics Press, Chicago, will be glad to send you a special catalogue on the aviation books which they publish.

JUST released is a book by a native Texan, Claudie Cranston. SKY GYPSY (pub. J. B. Lippincott company, $2.50) is an interesting account of 25,000 miles flying in the Pan American Clipper ships. Departing from Miami, Miss Cranston completely circled South America, and visited the West Indies, Central America and Mexico before she returned to her takeoff point.

The book is not a dry account of airline operations; in fact, Miss Cranston is more intrigued by the "tall, handsome, slim and blonde" pilots than she is interested in the rate of climb of the Clipper. Flying, naturally, gets considerable mention but the high lights of the book are her personal adventures.

If no adventures happen to be around, she digs them out as when, wanting to erally see the jungle, she engages a canoe far up the Amazon, and meets a boa constrictor in a one way waterway. Or again, in Rio de Janiero, she sees what "no other American woman has ever seen"—the streets of glass cages—rows and rows of women of all nationalities on display, in one of the world's most infamous districts.

I think you will like "Sky Gypsy" and the author's hodge-podge of facts, flying and feminine frivolity, interestingly reported. There are three amusing maps and 30 beautiful illustrations in aquatone. One wonders, however, why Miss Cranston herself did not take a few

(Continued on Page 32)

Quality Base

The trend is towards ultra-modern, finely equipped sales and service plants; a southwestern enterprise sets the pace in ground facilities for airplane owner.

By BEN BRANSOM

WHO of us can deny that aviation's market is one of quality, that upon efficiency and the best-to-be-had basis rests the success of air transportation? In recent years the private owner of aircraft, in his desire for "the best," in his logical demand for airline maintenance efficiency, has traveled far from home, oftentimes to the factory, in order to take advantage of superior equipment and workmanship that only a few houses could offer. Even the expense of overland flight to and from the "quality base" did not deter him. For his own ease of mind he expended time and money to get the best.

Happily, therefore, do we observe the gradual but definite passing of the one-horse set-up of fixed base operators and airplane salesmen, and the ascendency of modern, efficient and fully equipped institutions, small or large, whose very facades bespeak experience, quality and dependability. That is the trend, and it brings to mind the passing of the dirty, two-bit garage during the automotive world's expansion and the spread of sales and service institutions with precision tools and equipment ensconced in clean, business-like establishments.

Airline maintenance methods for the private owner—that has been the desire of the modern business man who owns and operates expensive equipment. With an investment of from three to fifty-three thousand dollars tied up in his speedy conveyance, one would expect him to demand preservation of his investment during the active life of his machine, like unto the owner of a fine automobile. Sales organizations and salesmanship that employs modern methods—that has been the crying need of the private owner field for many years. The day is ended when the dealer rolls his product out on the ramp and goes through a routine demonstration flight. The customer, unfortunately perhaps, is too "particular." He represents a quality market and demands quality treatment. Fixed-base operators are convinced of that.

MODERNIZATION of ground facilities, for the airplane owner is therefore more than just a current trend; it is the answer of an up and coming industry to the demands of its trade; it represents the investment of large sums of money not only to take care of present business but to build establishments that are prepared for inevitable future expansion; it prophesies the sale of many airplanes to companies and individuals who actually need aircraft, yet who have been out of reach because of effete and slip-shod methods of salesmanship; in short, modernization of ground facilities might be termed the harbinger of better days ahead for the fixed base operator.

Especially are we prone to admit all these facts when here, at home, we find a classic example of what can be done and what has been done in the sale and maintenance of aircraft in the private owner category.

We refer in particular to an establishment of several years' successful operation that blossomed out last month into one of the most complete and ultra-modern sales and service institutions in the United States, namely, Booth-Henning, Inc., of Love Field, Dallas.

Captained by Edward F. Booth and Hal P. Henning, two individuals with long, successful records in southwestern commercial aviation, the new sales and service institution was formally opened on January 25th. Comprising 25,000 square feet, their new hangar is constructed throughout of steel and hollow tile. Two of the latest type Byrne overhead doors (100 ft. and 65 ft. span) are electrically operated, providing a maximum overhead clearance of twenty-two feet, sufficient to accomodate the largest transport plane. The entire building is equipped with an automatic sprinkler system to meet the specifications of the State Insurance Commission.

WITHIN the new hangar is one of the most modern and best equipped engine overhaul and machine shops, designated as Approved Repair Station 195. In charge of this department is Arthur E. Tacey, who received his education in mechanical and electrical engineering at Loughborough Technical College, Leicestershire, England, from which he graduated in 1917. He served two years

ARTHUR E. TACEY

Chief of motor overhaul and machine shop at the motor test stand in the new quarters of Booth-Henning, Inc.

in the Royal Air Force and was honorably discharged as Second Lieutenant in 1920. Tacey has been actively engaged in the manufacture, construction and maintenance of aircraft up to the present time.

A great deal of thought has been given the shop with a view to provide ideal working conditions and to expedite the otherwise long process of complete overhauls. Each mechanic has an individual bench supplied with electrical outlets and compressed air, amply lighted to insure precision work. An overhead track is built into the shop by which it is possible to remove an engine from a ship in any part of the north sector of the hangar and move it directly into the engine overhaul section.

Modern methods and equipment guarantee an overhauled engine ninety per cent efficient to a new engine. The first stage of overhaul is disassembly, cleaning and polishing of all parts. Each part is carefully inspected, checked for measurement of wear and stretch of component metals. A detailed log of these dimensions is then recorded and any part overrunning the maximum limit, as prescribed by the manufacturer during the three hundred hours of operation, is replaced by genuine factory replacement parts.

The assembly of the engine is carried out with the utmost care in practically dustproof surroundings; every part is inspected and adjusted according to prescribed clearances of manufacturers' specifications. When the assembly is complete, the engine is installed in the motor mount, complete with heat deflector, as is possible on practically all modern airplanes, and run in the test house under simulated actual flying conditions.

THE test room is designed upon the wind tunnel principal, having a circular aperture in which the engine is run, in an absolutely free unobstructed air course, permitting the engine to run wide open in summer temperatures at a temperature not exceeding flying conditions. The engine mount is attached to two 10x8-inch girders mounted in a concrete block of 125 cubic feet displacement, insulated from the surrounding floor by a 2-inch thick rubber mounting on all sides. In this manner it is possible to subdue all vibrations and at the same time to relieve any strain upon the engine due to being mounted upon a solid object.

During the course of the test run, the engine is connected to a complete instrument panel, which records every action of the engine during this time. Apart from registering and correcting such readings as oil, fuel pressures and the like, it is possible to calibrate the fuel and oil consumption of an engine at any given speed, providing figures of interest to the owner as well as to the overhaul mechanics.

After the engine is run on this test, one or more cylinders are taken off and inspected for wear, the engine once more checked and if all is okay, the entire assembly is transferred by the overhead track direct and installed in the airplane.

To the casual observer, this process might appear unduly prolonged, but for factory methods one must understand three items which comprise a satisfactory overhaul: gas and oil consumption, adjustments more readily made on the test stand, and the elimination of wear and fatigue on an airplane engine during engine run period.

A complete machine and propeller overhaul shop adjoins the test house. Ideal working conditions surround the propeller department where all necessary equipment for complete factory overhaul is available. In the same department is the cylinder grinding machine with which cylinders are ground to a size and finish adaptable for replacement pistons. In addition, this section of the hangar boasts a 16-inch precision lathe, drill press, valve refacer, portable grinder and buffer, a 60-ton hydraulic press, a 10-foot propeller check table and a propeller balancing stand.

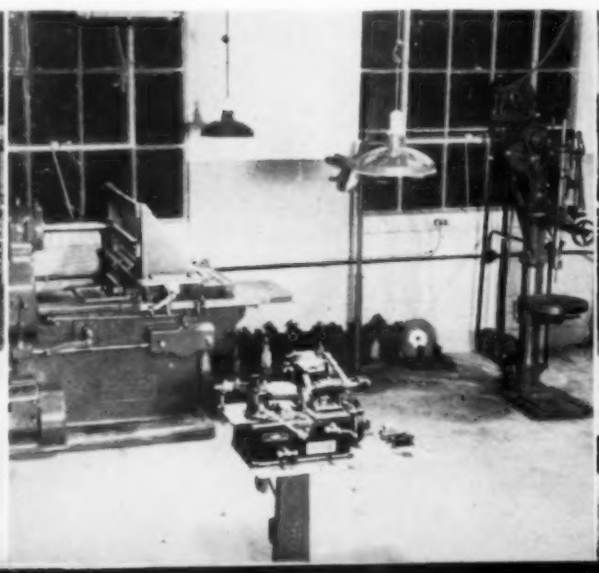
During the process of each job, the stock room, which carries all supplies necessary for overhaul, is readily available to all mechanics with only a few seconds loss of time. Close by, although a separate unit, is the dope and fabric room 40 feet by 30 feet, lighted by explosion-proof fixtures, and equipped with an exhaust fan and other safety devices. Hot air furnishes heat in order that fabric and paint jobs may be undertaken during any climatic conditions.

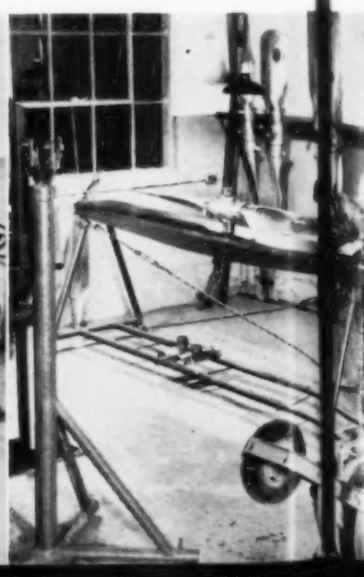
Combined with the hangar is the battery room, which is also fireproof and equipped to recharge from six to twenty batteries at the same time.

ONE of the most interesting departments, the instrument and accessory shop, is housed in the rear of the hangar, well-lighted and with ample electrical and air outlets. Its location affords quiet and freedom from dust. Here is equipment for overhaul and calibration of instruments, magnetos, generators, starters, and carburetors.

The head of this department is Frank Say, formerly connected with Chicago and Southern Airlines, Inc. Mr. Say has been in aviation for twelve years, after serving in the Navy during the war and going to sea as a certified watch officer. He is an associate member of the Society of Automotive Engineers, member of American Meteorological Society, and is licensed as pilot, airplane and engine mechanic and second-class radio-telephone operator.

Motor Assembly **Cylinder Grinder, Drill Press and Valve Refacer** **Propeller**





The instrument overhaul bench is topped with battleship linoleum and glass covers are used to protect parts from dust and damage; pyrex bowls are used to hold parts and cleaning solutions. Compressed air to this bench is cleaned and oil is applied by hypodermic syringe, the needle being protected by a pith block when not actually in use. Several cleaners are used: alcohol, benzal, cyanide solution and ammonia solution and castile soap. Parts washed in water are dried in an oven. Races, etc., are highly polished in a jewelers' lathe, using lerigated alumina or sapharim as a polishing agent. Especial attention is paid to ball bearings in gyro instruments, using specially selected balls that are within a tolerance of .00002-inch (two one-hundred thousandths). Races and pivots are inspected under glass, and by reflected light, and are given a high polish. Radium paint and other supplies, such as pegwood, pith, etc., are conveniently available. All parts are checked for residual magnetism and demagnitied if necessary.

INSTRUMENTS are tested and calibrated on a separate bench. For altimeters and climb indicators, a mercury barometer and bell jar are used, vacuum being obtained by a Kraissel motor-driven pump. Airspeed Indicators are tested against a mineral seal manometer calibrated to 300 m. p. h. All turn indicators are calibrated to airline standards, that is, one handwidth off will give a 360-degree turn in two minutes. This calibration is made on a speed reducing gear box with a table and mount for the instrument on top. It is driven by a 1-6 h. p. motor, which is also used to drive an adapter for two tachometers. One side drives a chronometric tachometer used as a master. Suction for the turn indicator is from the same pump used for the bell jar and the suction is measured for a mercury manometer.

Manifold guages are checked by both pressure and vacuum over the full range, measured on a mercury manometer. In checking fuel and oil pressure instruments a hydraulic ram is used, checking against specially calibrated master instruments. Compasses, after any mechanical work necessary, are filled with standard compass fluid, checked for oscillation period, etc. After filling they are placed in the bell jar and held at 35,000 feet for ten or fifteen minutes to boil out the gas in the fluid, then the filling is completed. This eliminates the usual formation of a bubble caused by temperature changes. Compensation is accomplished by use of a fixed base line and a pelorus which is swung in gimbals; this permits the pelorus to be placed anywhere on the ship and no leveling of the instrument is necessary.

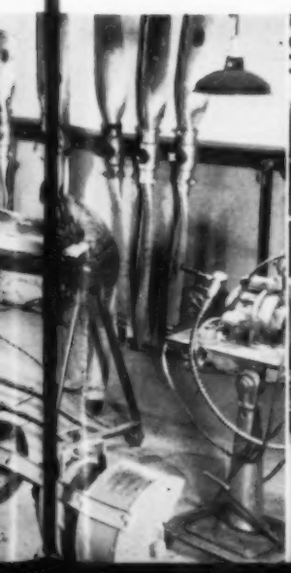
For directional gyros and horizons, special tools and equipment have been ordered and this department will be ready about April 15th.

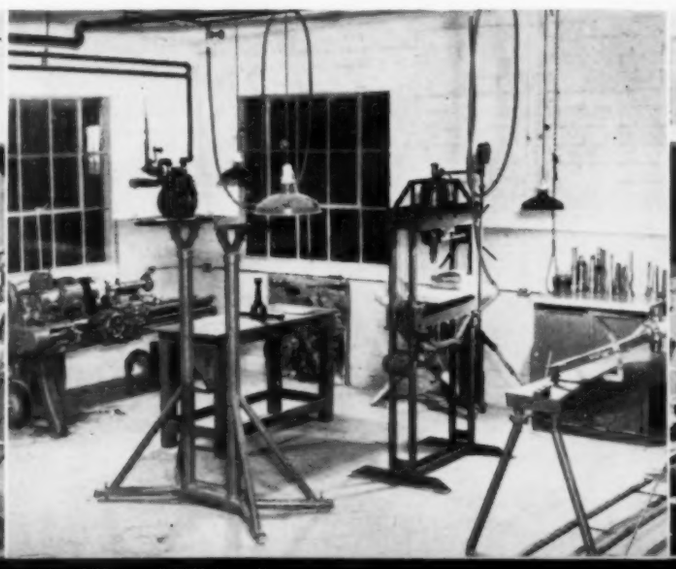
ANOTHER bench is equipped for the overhaul of magnetos, starters, generators, and control boxes, with the test bench conveniently by. A complete set of magneto tools and many special tools for generators and starters facilitate this work and make available many special operations formerly requiring that the unit be sent to the factory. For instance, starter clutches are set by means of a bar with a suspended weight, set at a distance from the center to allow accurate setting to the manufacturer's specifications. The clutch is held by an old starter specially rigged and fastened to the bench. When magnetos are overhauled all blocks and insulators of bakelite or clay are baked in an oven electrically heated, at a temperature of 200 degrees F. until they show absolute freedom from any high tension leakage. Then, after cooling to room temperature, they receive as many coats of Glyptal lacquer as time permits. Each coat is baked about three hours at 200 degrees. It has been found that this method eliminates hard starting from condensation and prolongs the useful life of the parts. The test for leakage mentioned above is made by means of a high voltage (475 volts) of D. C. current passed through a neon light. By means of this portable tester any leak, from the slightest high tension to a direct short, can be detected, and thus the entire ignition system, wires and other parts, may be checked. Coils are also baked, at a temperature of 175 degrees F. as long as possible, and then lacquered with Glyptal. Glyptal is a preparation of G. E. and has a very high value as a dielectric, or insulator and is impervious to gas, oil or water.

Magnetos and generators and other electrical equipment are tested on the electrical test bench, driven by a variable speed motor with a belt drive to suitable brackets. For magnetos, a panel with three-electrode type points is used and the magnetos are kept heated to a temperature of 160 degrees F. while on the test run. The magneto strength is measured by a special A. C. airmeter, measuring the primary output at 400 R. P. M. This instrument is mounted on a panel, on which are also a D. C. airmeter and a D. C. voltmeter for geesrator test. On this panel are also two sets of continuity tests; one 100 volts A. C. and one 25 volts D. C. The latter is connected with the low scale of the precision voltmeter for measuring resistance, etc. Generators and control boxes are checked together, thus assuring accurate operation when installed together. Connections for these tests are through tip

(Continued on Page 32)

Lathe, Hydraulic Press and Prop Balance Stand





Instrument Overhaul, Test Benches

Three New Wacos

Aircraft 1936

Model YKS

Model YPF

Model YQC

Model YKS Series S-6

THE standard Waco Cabin for 1936 is a 4-5 place job powered with the Jacobs L-4, rated 225 horsepower at sea level. The fuselage is the conventional Waco welded seamless steel tubing construction, wood faired and fabric covered. Wings are of spruce spars and spruce and plywood ribs. The tail group is of welded aircraft steel tubing.

SPECIFICATIONS

Span	33 ft. 2⅝ in.
Length	25 ft. 4⅜ in.
Height	8 ft. 6 in.
Wing area	240 sq. ft.
Power loading	14.44 lbs./h. p.
Wing loading	13.54 lbs./sq. ft.
Empty Weight	1798 lbs.
Useful load	1452 lbs.
Payload	969 lbs.
Gross weight	3250 lbs.
Baggage (with full load)	125 lbs.
Fuel capacity	50 gal.
Oil capacity	4 gal.

PERFORMANCES (Std. Equipment)

Maximum speed	144 m. p. h.
Cruising speed	131 m. p. h. at 1900 r. p. m.
Landing speed without flaps	54 m. p. h.
Service ceiling	15,000 ft.
Rate of climb	800 ft./min.
Cruising range	450 miles

STANDARD EQUIPMENT

Landing gear tires, size 8.50x10 semi balloon	Goodrich or Firestone
Tail wheel tire, size 10½ in., streamline	Goodyear
Wheels: Auto Fan	Hayes
Brakes: Auto Fan	Hayes
Shock absorbers	Waco

INSTRUMENTS

Altimeter	Aeromarine
Oil pressure gauge	Aeromarine
Oil temperature gauge	Aeromarine
Tachometer	Aeromarine
Ammeter	Weston
Airspeed indicator	Aeromarine
Compass	Aeromarine
Windshield, safety glass	Pittsburgh Plate Glass
Cabin glass, safety glass	Pittsburgh Plate Glass
Starter, electric	Eclipse

Model YPF Series F-6

ONE of the outstanding open model Wacos for 1936 is the three place YPF, powered with the Jacobs L-4 engine. This model is also furnished UPF with Continental 225, ZPF Jacobs 285, CPF Wright 250, DPF Wright 285, with varying loads, prices and performance. Performance figures shown below were compiled with the Jacobs L-4.

SPECIFICATIONS

Span	30 ft.
Length	22 ft. 10 in.
Height	8 ft. 5½ in.
Wing area	243 sq. ft.
Power loading	11.76 lbs./h. p.
Wing loading	10.90 lbs./sq. ft.
Empty weight	1675 lbs.
Useful load	975 lbs.
Payload	484 lbs.
Gross weight	2650 lbs.
Baggage (with full load)	75 lbs.
Fuel capacity	50 gals.
Oil capacity	4 gals.

PERFORMANCES (Std. Equipment)

Maximum speed	150 m. p. h.
Cruising speed	132 m. p. h. at 1900 r. p. m.
Landing speed without flaps	48 m. p. h.
Service ceiling	18,000 ft.
Rate of climb	1150 ft./min.
Cruising range	450 miles

STANDARD EQUIPMENT

Landing gear tires, size 8.50x10 semi balloon	Goodrich and Firestore
Tail wheel tire, size 10½ in., streamline	Goodyear
Wheels: Auto Fan	Hayes
Brakes: Auto Fan	Hayes
Shock absorbers	Waco

INSTRUMENTS

Altimeter	Pioneer or Kollsman
Manifold pressure gauge	Pioneer
Fuel gauge, electric	A. C. Spark Plug Co.
Oil pressure gauge	Pioneer
Oil temperature gauge	Pioneer
Tachometer	Pioneer or Kollsman
Ammeter	Weston
Airspeed indicator	Weston or Kollsman
Compass	Weston or Kollsman
Windshield, safety glass	Pittsburgh Plate Glass
Cabin glass, safety glass	Pittsburgh Plate G.ass
Starter, electric	Eclipse

Model YQC Series C-6

THE 1936 De Luxe Cabin Waco is either four or five place, incorporating vacuum, split type flaps. On the standard model, the Jacobs L-5 225 horsepower engine furnishes the power. This airplane is also manufactured as UQC with the 225 Continental, the ZQC with the 285 Jacobs, the CQC with the 250 Wright, the DQC 285 Wright, the EQC with the 320 Wright with varying loads, performances and prices.

SPECIFICATIONS

Span	35 ft. 0 in.
Length	26 ft. 8½ in.
Height	8 ft. 7½ in.
Wing area	244 sq. ft.
Power loading	14.90 lbs./h. p.
Wing loading	13.73 lbs./sq. ft.
Empty weight	2050 lbs.
Useful load	1300 lbs.
Payload	672 lbs.
Gross weight	3350 lbs.
Baggage (with full ld.)	125 lbs.
Fuel capacity	70 gal.
Oil capacity	5 gal.

PERFORMANCES (Std. Equipment)

Maximum speed	159 m. p. h.
Cruising speed	140 m. p. h. at 1900 r. p. m.
Landing speed with flaps	55 m. p. h.
Service ceiling	16,000 ft.
Rate of climb	760 ft./min.
Cruising range	600 miles

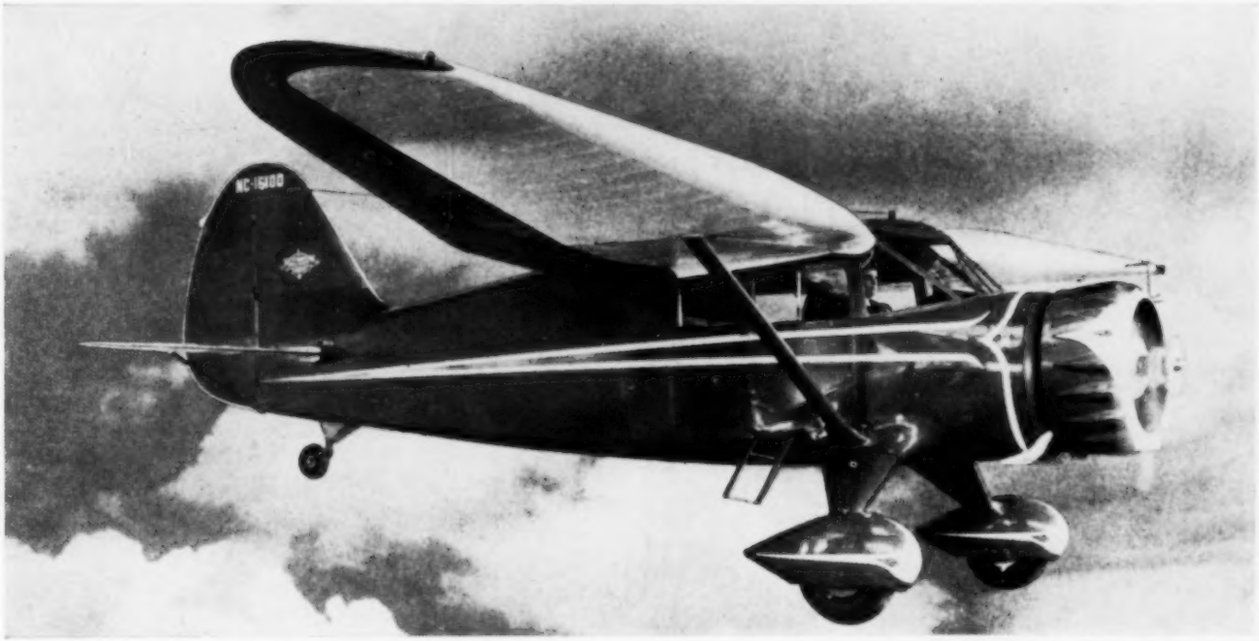
STANDARD EQUIPMENT

Landing gear tires, size 8.50x10—semi balloon	Goodrich and Firestone
Tail wheel tire, size 10½ in., streamline	Goodyear
Wheels: Auto Fan	Hayes
Brakes: Auto Fan	Hayes
Shock absorbers	Waco

INSTRUMENTS

Altimeter	Pioneer or Kollsman
Manifold pressure gauge	Pioneer
Fuel gauge: Electric	A. C. Spark Plug Co.
Oil pressure gauge	Pioneer
Oil temperature gauge	Pioneer
Tachometer	Pioneer or Kollsman
Ammeter	Weston
Airspeed indicator	Weston or Kollsman
Compass	Weston or Kollsman
Windshield—safety glass	Pittsburgh Plate Glass
Cabin glass—safety glass	Pittsburgh Plate Glass
Starter—electric	Eclipse

Stinson Reliant



RETAINING all the fine qualities of its predecessor, the new 1936 Reliant shows increased performance together with many additional design features. Cruising speed has been increased fifteen miles an hour to 138.5 for the standard SR7-A and to 141 m. p. h. for the specially equipped SR7-B. Power is furnished by the Lycoming nine cylinder radial transport 225 horsepower motor, Model R-680-4.

In addition, the new Reliant takes off with less run, climbs faster, has a greater ceiling, greater cruising range, carries more useful load, and operates 12 per cent more economically than previous Reliants.

Stinson's new bid for fame this year also includes the use of vacuum flaps with slots and a wing structure entirely of metal, including spars, rigs, ailerons and flaps.

The landing gear is the conventional cantilever type with Aerol shock struts and low pressure tires with hydraulic disc brakes. The controls on this year's model are of the Dual Auto type, which protrude through the instrument panel. The dual rudder pedals are adjustable, and both control wheel and rudder on the right side are quickly removable.

Both pilot seats are adjustable fore and aft and have folding backs. Arm rests for pilot and co-pilot are provided. The wide tufted form fitting rear seats have baggage space beneath with additional space provided in a large, lighted compartment with outside entrance.

Fresh hot or cold air intakes for the cabin are controlled by the pilot. A Stinson "safety-type" heater is standard equipment. The instrument panel recessed and walnut grained, is shock mounted in rubber. The windshield is of the Transport "V" type with larger windows and better vision. Safety glass is used throughout.

Performance and Weight Characteristics

Standard Reliant Model SR7-A		Long Range Reliant SR 7-B, specially equipped	
Pilot	170 lbs.	Pilot	170 lbs.
Three Passengers	510 lbs.	Three Passengers	510 lbs.
Fuel, 50 gallons	300 lbs.	Fuel, 70 gallons	420 lbs.
Oil, 4 gallons	15 lbs.	Oil, 5 gallons	38 lbs.
Baggage	105 lbs.	Baggage and special equipment or extra fuel	152 lbs.
Useful Load	1115 lbs.	Useful Load	1290 lbs.
Empty Weight	2260 lbs.	Empty Weight	2310 lbs.
Gross Weight	3375 lbs.	Gross Weight	3600 lbs.

Performance With Full Load

Standard Reliant Model SR 7-A		Long Range Reliant SR 7-B, specially equipped	
Cruising Speed 5,000 feet, density altitude—180 h. p.	138.5 m. p. h.	Cruising Speed, 5,000 feet, density altitude—180 h. p.	141 m. p. h.
Rate of Climb	715 Feet	Rate of Climb	850 Feet
Service Ceiling	12,800 Feet	Service Ceiling	14,600 Feet
Landing Run with Vacuum Flaps	200 Feet	Landing Run with Vacuum Flaps	225 Feet
Range (50 gallons)	400 Miles	Range (70 gallons)	560 Miles

CONSIDERABLE interest is being manifested in the new Stinson Model B Bi-Motor, a low wing six-place cabin monoplane, now under development at the factory. Cruising speed is reported to range between 152 miles per hour at 1,000 feet to 160 miles per hour at 6,000 feet altitude. A relatively low wing loading of 18.5 pounds per square foot permits safety features with single engined performance, adequate service ceiling, landing and take-off characteristics with economical power units.

The Model-B has a power loading of 12.7 pounds per square foot. Wing area is 357 square feet. Wing span is 52 feet, 6 inches. Overall length is 10 feet, 6 inches. Overall height is 31 feet, 8 inches. Empty, the plane weighs 4500 pounds. Payload is 1150 pounds, useful load 2100 pounds; and gross weight 6600 pounds.

Swallow Model C

TEST flights on a new Swallow model, the Model C monoplane, were conducted the latter part of January. The ship is being manufactured under direction of E. B. Christopher, president of the Swallow Airplane Company of Wichita. The ship was designed by L. Bloomfield, and represents the re-entry of the Swallow concern into the airplane manufacturing field.

The two-place, side-by-side cabin job is powered with the Menasco C 125 h. p. in-line engine, which produces a high speed of 125 miles an hour and a cruising speed of 115 miles per hour. Landing is effected at 42 miles per hour and the service ceiling is 18,000 feet.

In general the construction is of conventional welded steel tube, wood and fabric. Of special interest is the full cantilever type landing gear employing a shock absorbing mechanism inside the fuselage and the gull wing arrangement which makes for exceptionally good visibility from the cabin in all directions.

The wide tread of seven feet and six inches effectively precludes ground looping during landings. With a gross weight of 1,950 pounds, the Model C has a wing loading of 10.3 pounds per square foot and a power loading of 14.8 pounds per horsepower. Wing area is 189 square feet.

Particular attention has been paid to the design of control mechanisms, and Fafnir bearings are employed throughout to assure smooth and easy operation.

Span of the new model is 36′ 8″, length 24′ 4″, height 7′ 3″. Airfoil N-22 is employed.

The "New Cub" J2

FROM Bradford, Pa., comes news that the Taylor Aircraft Company have gone into production on a new and improved version of the popular Taylor "Cub."

Called the "New Cub," the sportplane is the result of nearly a year's work by the engineering department of the company. It was specified at the outset of the work that the new design must retain the desirable features of the old Taylor "Cub."

A careful study of operator's suggestions and painstaking research was made prior to production of the new model.

Appearance is the first feature of the "New Cub" that will be noted. From the standpoint of beauty the little ship ranks high.

The wingtips are rounded off; the stabilizer, elevator, fin and rudder blend into the fuselage in sweeping curves. The fuselage is built into the wing in conventional closed cabin style.

Efficient streamlining of the fuselage has resulted in an increase in the top speed of the plane. Cruising speed is likewise increased and the resulting economy should bring higher performance figures in cross country flights.

The "New Cub" in standard colors has a very attractive color scheme. The wings and fuselage are finished in opalescent copper. The motor cowling, lettering and striping are done in opalescent green. Yellow wings with black lettering and stripes is also furnished as a standard color.

A baggage compartment in the rear of the cockpit is made possible by a more roomy cabin.

Last year over twenty per cent of the civilian planes manufactured in the United States were Cubs. As nearly all of these Cubs were of the enclosed type it was decided to make the "New Cub" of the closed cabin type. However, it may be converted to an open air ship by merely removing the full length pyralin windows on each side of the cockpit.

From the operator's standpoint the feature of the new plane that will perhaps be most appreciated is the wide landing gear. This landing gear, of the split axle, shock cord type, measures 72 inches from tread to tread. The extra width is effective in preventing the ship from tilting with wind gusts when on the ground.

Wings of the new plane are constructed to the U. S. 35-B airfoil section. Twelve rigs and twelve false ribs are mounted on two spruce spars to form each panel. Stamped and riveted from nickel-aluminum alloy sheets the ribs are of a patented truss construction.

Floor boards and spars are the only wood used in the construction of the "New Cub." The fuselage is of chrome molbydenum and 1025 carbon steel. Tail surfaces are of steel tubing throughout. The ailerons are a combination of steel tubing and Nicral with fabric covering. The entire ship is fabric covered.

The powerplant is a Continental A 40-3 motor which delivers 37 horsepower at 2550 revolutions per minute. A nine gallon gas tank provides fuel for approximately three and a half hours flying time. Oil capacity is one gallon, sufficient for all ordinary operation of the plane.

Specifications

Wing Span	35 ft. 2½ in.
Length, overall	22 ft. 5 in.
Height, overall	6 ft. 8 in.
Wing Area	178.5 sq. ft.
Wing Loading	5.44 lbs.
Fuel Capacity	9 gallons
Oil Capacity	1 gallon

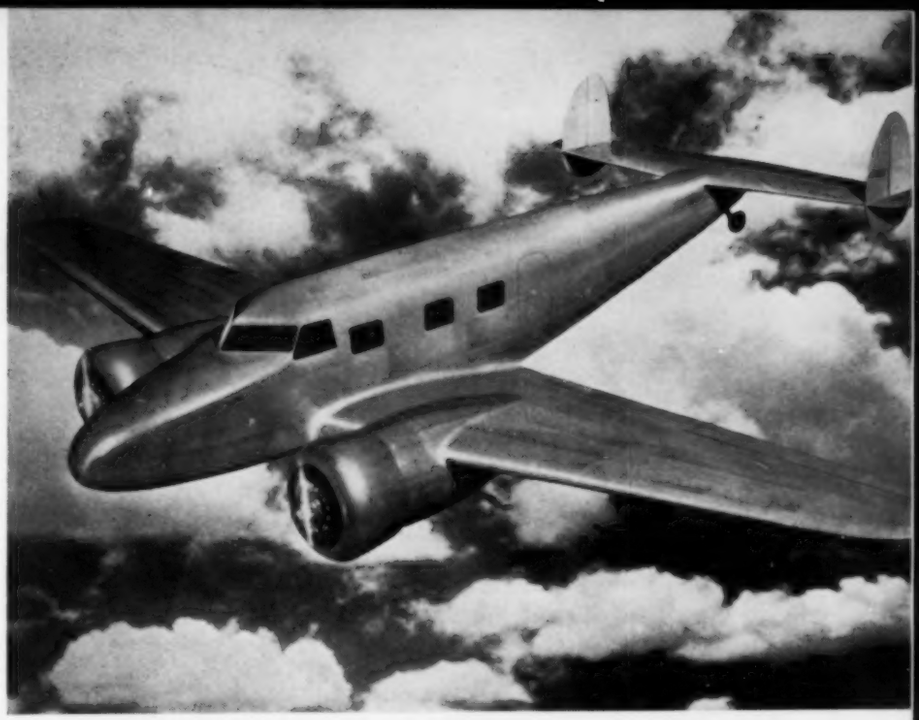
Weights and Performances

Power Plant, Cont. A-40-3	37 h. p.
Weight Empty	563 lbs.
Useful Load	407 lbs.
Payload	175 lbs.
Gross Weight	970 lbs.
Power Loading, per h. p.	25.5 lbs.
Maximum Speed, sea level	87 m. p. h.
Cruising Speed	70 m. p. h.
Landing Speed	30 m. p. h.
Rate of Climb, first minute	450 feet
Cruising Range	210 miles
Service Ceiling	12,000 feet

The Lockheed 12

INCORPORATING all of the advantages of the Lockheed Electra and offering even greater speed and general performance, a new 8-place, twin-engine airliner, the Lockheed 12, will soon make its appearance at the Lockheed factory. The plane is to be smaller than the Electra. Wing span is 49 feet 6 inches, while the overall length is 36 feet 4 inches.

In announcing the latest Lockheed, officials of the company said the new plane was developed to give the private owner, business man, industrial concern and small airline operator an economical airplane that furnishes the same degree of security and comfort at a higher speed than is now offered by the modern super-liners operated by the major transport lines today.



The graceful lines of the Electra are incorporated into the smaller Lockheed 12.

Based on three years of research, test and service with the 12-place Electra, the design and construction of the smaller Lockheed 12 represents an advanced degree of refinement and construction. Equipped with two 450-horsepower Wasp Junior SB engines in the leading edge of the center section wing, the new liner has a maximum speed of 231 miles per hour. When placed in operation, it is expected to be one of the fastest airliner in regular service in the world.

Constructed principally of Alclad 24ST (aluminum alloy, aluminum coated), the Lockheed 12 has a monocoque fuselage and skin-stressed wing of advanced design similar to that of the sturdy Electra. The twin fin and rudder arrangement, which has made for superior stability and controllability of the Electra, has been further developed and refined for the Lockheed 12.

There are to be four models of the plane. Model 12A is powered by Pratt & Whitney Wasp Juniors SB. Each engine has available for takeoff 450 horsepower, with 300 horsepower available at rated r. p. m. for cruising. Model 12B uses Wright Whirlwind engines, model R975E3. Intended primarily for sea level operation, these engines have 440 horsepower for takeoff and 300 horsepower for cruising. Model 12F is constructed to fly with seven-cylinder Wright Whirlwind engines of lower horsepower rating. The fourth model, 12M, is powered by two Menasco six-cylinder engines of 290 horsepower each, with 195 horsepower each available for cruising.

Although the new airplane is smaller than the Electra, the fuselage is approximately the same cross-section as the larger plane, offering the same degree of comfort and roominess for passengers. Actual length of the passenger cabin including pilots' compartment is 14 feet 8 inches. Maximum width of the cabin is 5 feet and total volume is 285 cubic feet. At the rear of the fuselage are lavatory facilities and a baggage compartment of 33 cubic feet capacity.

As in the Electra, the cabin is completely soundproofed and has the same efficient system of ventilation. In airline service, the plane will carry six passengers in adjustable seats, a crew of two and 450 pounds of cargo stored in the rear compartment and in the nose.

Wing construction is of the semi-stress skin type, with a single shear beam. The wing is readily accessible and repairable. Split-type trailing edge wing flaps effectively increase the gliding angle and reduce the landing run.

The entire wing, as are all surfaces, is made of metal, the exterior surface bing smooth to give the lowest possible resistance. Heavy corrugations under the skin add to the strength and make it possible for a person to walk down the center of the wing without damaging the skin. Wing loading is 22.5 pounds per square foot.

As with the Electra, the center section of the Lockheed 12 is cut away at the fuselage, permitting the fuselage to be placed partly within the wing. This gives the airplane a small frontal area, eliminates excessive drag and permits of high performance figures. The smooth design of the nose and forward part of the cabin reduces drag of that portion to a minimum and the sloping, streamline construction also affords maximum visibility for the pilots.

Specifiications of the plane just released by Lockheed officials illustrate the aerodynamic refinement of the new model. At sea level, the plane will take off in 600 feet and climb at the rate of 1,400 feet per minute, with the Wasp Junior engines. Eight hundred horsepower developed by the two engines will give the plane a top speed of 231 miles per hour at 5,000 feet. Cruising speed is 209 miles per hour at 9,600 feet, and ceiling with full load is 27,000 feet. With 60 per cent power and with a fuel consumption of 39 gallons per hour, the plane has a cruising range of 650 miles.

Gross weight of the new airliner is 7,925 pounds as compared with 10,000 pounds for the larger Electra. The plane will carry a useful load of more than a ton. This includes 450 pounds of cargo and 140 gallons of fuel.

SPECIFICATIONS OF LOCKHEED 12A WITH WASP JUNIOR SB

Airplane Data

Type	8PCLM
Length	36 ft. 4 in.
Wing Span	49 ft. 6 in.
Height Overall (tail on ground)	9 ft. 9 in.

(Continued on Page 32)

News Briefs

Notes From the Industry at Large

Sperry 15-Year Club Meets

The second annual dinner of the Sperry Employees 15-Year Service Club was held January 14 in Brooklyn. The dinner was a testimonial in honor of twenty-one men who on January 1st had rounded out twenty years with the Sperry Gyroscope Company, Inc.

The membership of the 15-Year Club numbers 173 and includes all employees of the Company, both men and women, regardless of rank or position, who have had at least fifteen years of service.

Mr. Carl F. Carlson, Foreman, Electrical Winding Department, president of the Club, introduced the speakers, who included Mr. Thomas A. Morgan, Chairman of the Board of Directors, Mr. Preston R. Bassett, Vice-President in Charge of Engineering, and Mr. Reginald E. Gillmor, President and General Manager. Mr. Gillmor, on behalf of the management, presented each of the honor guests with either a gold watch or silver service, and, being an honor guest himself, received his watch from the hands of Mr. Morgan.

There is now a total of forty-eight employees having twenty or more years of service with the Sperry Company.

TWA Adopts Facsimile

Facsimile, a new development of radio which permits the transmission of written or printed messages and the reception at any number of distant points without the aid of wires, now is being applied experimentally by Transcontinental & Western Air, Inc., between two of the radio ground stations on its coast to coast system.

Carried on with the idea of applying it eventually to its aircraft, the air line's experiments with facsimile now are being conducted in cooperation with the Radio Corporation of America between the TWA headquarters base at Kansas City and the company's radio station at Chicago. The results obtained thus far in the experiments indicate that facsimile will become a part of the nation-wide communications system which TWA maintains in its constant chain of messages to and from its aircraft or in the many messages which daily are sent between the company's many ground stations.

In brief, facsimile is a form of radio communication which operates around a new and high speed typewriter, a transmitting unit and a receiving unit. In its transmission, facsimile resembles closely the "wirephoto" process by which photographs now are flashed from one city of the United States to another. Wires are an essential to the latter process, while facsimile functions without the necessity of any tangible connecting links other than radio impulses between point of transmission and point of reception.

New Pilot Group

"Sport Wings" will soon take to the air in Los Angeles. A group of L. A. pilots have organized under this name solely for the purpose of promoting sport and good times in local aviation circles.

The new organization is the outcome of a meeting of twenty-five pilots at a dinner at Grand Central Air Terminal, January 14th.

A committee consisting of Wally Timm, Larry Therkelson, Norm Larson, Bert Rhine, Dr. Ward Williams, Al Essig, Warren Carey, Ben McGlashan and Ted McClellan was chosen to complete the details organizing the group and to draw up the corporation papers. Wally Timm is chairman. The membership will be picked from pilots holding private pilot licenses or better.

The club expects to concentrate its first efforts toward promoting air tours, the first of which will be held February 22. Later they expect to stage aerial treasure hunts and many other activities. Treasure hunts are an aviation sport that has never been introduced to the Pacific Southwest. The small group that attended the dinner at Grand Central were enthusiastic about the future possibilities of a truly sportsmen pilots' organization in California.

School for Prospective Employees

Air transpartation's first training school has been established in Chicago by American Airlines, Inc.

Twenty-four prospective employees, including eighteen men and six girls, comprise the student body of the school at present, each carefully selected by officials of American Airlines from hundreds of applicants from all parts of of the United States.

Primarily organized for the purpose of training sales personnel, the new school also includes a special course for operations men and for stewardesses.

Willard Reed, Jr., director of the school, conducted a similar school, on an experimental basis, for American Airlines in New York last fall, under the direction of M. D. Miller, general sales manager of the air line. Results of those first classes were so successful that company officials brought Reed to Chicago to establish the school on a permanent basis.

An effort is being made, Reed said, to provide the student body with training of both an academic and practical nature. Lectures are scheduled by more than 50 leaders in the aviation industry, both inside and outside the company, and students are required to keep note books, take written examinations and maintain high grades throughout the term of training.

N. A. A. Elects Officers

Charles F. Horner was elected president of the National Aeronautic Association Jan. 7, succeeding Senator William G. McAdoo.

During the past year Horner has served as assistant to Senator McAdoo in directing N. A. A. activities. McAdoo refused to become a candidate for re-election, stating that the pressure of other affairs made it impossible for him to devote time to N. A. A. matters.

Maj. Al Williams was elected vice president, succeeding Maj. James Doolittle, who asekd to be relieved of his duties during the coming year.

Louise Thaden became secretary, while Ben King, Washington sportsman pilot, was choser as treasurer.

New Bids Requested

The Assistant Secretary of War, the Honorable Harry H. Woodring, announced Jan. 2 that no awards will be made under Circular Proposal 35-804. This Circular Proposal was for the pursuit airplane to be procured under competition. New bids have been requested and the opening date set for April 15, 1936.

As a result of close study and exhaustive test of pursuit planes submitted by various manufacturers during the past few months, the War Department announced that although the aircraft submitted represented a great advancement over this type of aircraft in present use, yet not one of those submitted in the competition completely met the desired attainments of the modern military pursuit airplane.

Wright Medal Awarded Littlewood

The Wright medal, presented annually for the outstanding paper in the field of aeronautics, was awarded this year to William Littlewood, chief engineer of American Airlines, Inc.

Littlewood's prize winning paper on "Operating Requirements for Transport Airplanes," was read at the last annual meeting of the S. A. E. The award was made in Detroit January 16.

The S. A. E. committee, consisting of C. W. Chatfield, E. P. Warner and F. E. Weick chose Littlewood's paper as outstanding for the year 1935. The Wright medal, named in honor of the Wright brothers, first to fly heavier than air craft, has gone each year since 1925 to some outstanding aeronautical engineer.

Manly Memorial Medal to Beardsley

Guy E. Beardsley, Jr., project engineer of the Pratt & Whitney Aircraft Company has been awarded the Manly Memorial medal by the S. A. E. for his paper entitled *An Automatic Power and Mixture Control for Aircraft Engines.* The award is made annually for the most outstanding paper relating to airplane power plants.

Ogsbury Joins Fairchild

James S. Ogsbury who has been prominent in leading business concerns in this country and Canada for more than 25 years, has been named Vice-President and General Manager of the Fairchild Aviation Corporation.

JAMES S. OGSBURY

He will have charge of the activities of all the Fairchild subsidiaries, which include the Fairchild Aerial Camera Corporation, Woodside, L. I.; Fairchild Aircraft Corporation, Hagerstown, Md., Fairchild Aerial Surveys, Inc., of New York and Los Angeles; and Ranger Engineering Corporation, Farmingdale, L. I.

Ryan Executives on Industrial Board

T. Claude Ryan, representing the Ryan Aeronautical Company and Earl D. Prudden, representing the Ryan School of Aeronautics, are among the group of charter members of the recently formed Aeronautical Industrial Relations Association, one of the purposes of which is to coordinate the training of aeronautical students with the increasing demands for skilled labor in the aeronautical industry.

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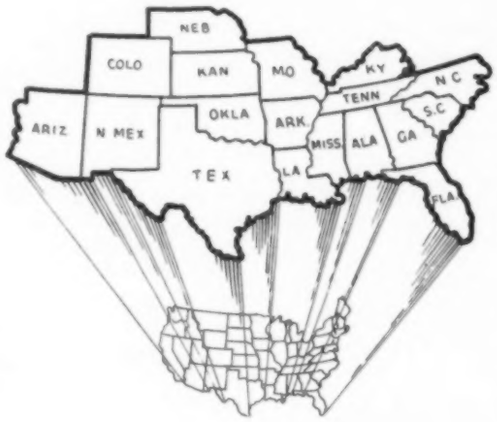
Ports of Call

Correspondence from the Airports and Airways

Albuquerque, New Mexico

Albuquerque Airport, east of town, has been as busy as Grand Central in Glendale for the past two weeks. And it's all on account of Frank Speakman has taken over the management again. Believe you me, the place is really a rejuvenated airport. All of the runways have had a shave and massage under the able tractor pilot, Bob Spencer, who really makes them into smoothies.

The old maestro Billy Parker was through in a nice shiny Vultee last week and then the very next day Harry "ESQUIRE" Ash came booming in on us with a nifty Lockheed Electra loaded with Fleischmans and built in tail winds.



Chuck Spencer from Douglas Arizona is with us again and is really keeping busy instructing, and refinishing the Airports' Fleet. Between the two jobs he manages to get in a little extra work to keep busy.

Colonel Buzz Hershfield has returned from Hollywood, (we heard it was something about a blond) and has established the Hershfield Air Service. He has taken the dealership for Aeronca and believe it or not the new C3 really goes to town in this high altitude. Charlie Strong, factory representative, delivered the job to Albuquerque.

Bud Hagan who was formerly with the Douglas Airport has just come here, and is riding with the gang on the new wave of prosperity that has just started washing the sand out of our hangars, things were really bad here for a while; just as an example, Frank Speakman shot a deer in the shop three weeks ago. Now we can't even find room for a rabbit.

Dr. L. C. Cook has pulled his tent pegs from TWA field and is now back in the fold with his new Fairchild. It seems pretty swell to see the old gang around again.

Hershfield Air Service has seventeen students in two weeks of operations, and more are coming out every day. The Colonel sez he is going to get a good fast job for charter work and then all will be hunky dory.

Chuck Spencer is giving time on the Fleet and from the looks of things he is in for a busy summer.

The gang got together Sunday nite for the first of Hershfield Air Service's Wing Dings, and from the looks of the club room, it was a raving success (mostly raving). Chuck Spencer said that it got zero about twelve o'clock and we guess that's the reason he spun in while the music went round and round. There were about fifteen couples of air minded and light headed people present and the only casualty was Bob Spencer, but we are going to pour him back into the bottle, tomorrow.

George Hammond of stationery fame was through enroute to his home in Santa Barbara. He was flying a nice Wright Beechcraft, and it was really a slick job. Nice fellow too, so stop again.

Tex LaGrone, the old son of a gun, was through recently with a whole flock of Wacos enroute to the show in L. A. Bud Hagan saw them coming in and thought it was an air raid and ran for the cellar. It took us two hours to find him; guess they don't have that much activity in Douglas? We hadn't any more than got them on their way than in boomed another Waco from the factory, and along with Marshall Sawyers arrival we took the Aeronca up to see if it said Troy on the hangar, cause after all 6 Wacos in one day is too much.

Mr. and Mrs. W. J. Cheney were in for a little fuel and heat in a new Fairchild 22, and then that afternoon K. R. Cole dropped in and spent the night with a J6 Robin (?).

Mrs. Chuck Spencer hot pilot and a ninety niner took a fling at the Aeronca and won the first fall in twenty two minutes. She pronounced it okel dokel so we can go ahead and do business.

Rodney Nimmo, "Nimmo" to you, a Kansas University graduate in aeronautical engineering, has bought his single place sport biplane to the field for final assembly. It really looks slick and is powered with a Szekley. Looks like its papa was scared by a Curtiss Hawk. Nimmo has talked the old Colonel into test hopping the job, so it looks like an air show is in the offing.—COL. BUZZ HERSHFIELD.

Beaumont, Texas

January 23rd marked the anniversary of the inauguration of air mail service to the city of Beaumont. Seven years ago, a Fokker Super Universal arrived from Houston with Earl Potts as the pilot. With the exception of a brief period during the air mail cancellation uproar, the city has been served continuously since that time.

Two famous transatlantic pilots met for a brief moment when Clarence Chamberlin landed just before Lieut, Com. E. Jozan, French navy pilot, took off. The former is noted for his west-to-east flight, while Jozan piloted a seaplane from France to the West Indies.

The Chamberlin outfit had two Condors and, despite very unfavorable weather, did very well here and at Port Arthur. They went to Corpus Christi from here. Local pilots and airport officials took little stock in the "establishing a new airline" ballyhoo, believing that an airline survey is rarely made by means of plain old fashioned "barnstorming."

Gulf Air Service is flying its Taylor Cub to Woodville once a week and a number of students are taking time at Woodville's new emergency field. Bob Thornton, who recently soloed the Cub, flew the ship up on its first trip,

accompanied by Andy Gibson, instructor for the service.

The airport buildings were repainted but WPA funds still remain a theory, although they have been granted according to newspaper reports. No money has been received and the Beaumont airport is in the worst condition in its history (especially after heavy rains. A good showing of oil has been found in Humble's new well adjacent to the airport and city officials will probably use this for an excuse against any airport improvements. Visiting pilots are cautioned to stick to the remains of the runways (if they can find them) when landing and taxying.

Among visitors during January were C. M. Horstman (Stinson); United Gas (Vultee); J. C. Sanders (Standard); John Kirschke (States); Homer Henderson (Robin); McDermitt Oil Co. (Fairchild); "Buz" Buswell (Commandaire); Socony-Vacuum (Travelair); Roy McGuire (Monocoupe); J. Vanvuren (Waco); C. C. Scott. (Waco); R. Z. Glass (Beechcraft); Harry Hammill (Beechcraft); E. Brabelton (Waco); J. O. Dockery (Ryan) and a raft of army and navy pilots.

Inspector Clark renewed the license of Raymond W. Kirk, transport, and re-licensed "Buz" Buswell's Commandaire, on his January visit.

Activities at the field were greatly hampered by the weather all during the month and we had the novelty of seeing ice on airplane wings—"most unusual weather". as the Californians say. L. J. FISHER.

Bryan, Texas

The local airport, one and one-half miles southwest of Bryan, is owned by Dr. L. O. Wilkerson and B. A. Black. This is not a municipal field but is privately controlled. This is an all-weather field where aviation gasoline can be procurred. On this field we have four shed-type hangars; as follows: Hangar No. 1, Dr. L. O. Wilkerson, Fairchild "24"; Hangar No. 2, B. A. Black, Travelair; Hangar No. 3, Robert Putz, Taylor Cub; Hangar No. 4, Captain Geo. Johnson, Ranger.

Dr. L. O. Wilkerson flew his Fairchild to various communities near here last week where he administered vaccine to school children. Doctor is the proud possessor of a private license.

Brazos Varisco has just completed a new three-place hangar on his Brazos bottom plantation and has already purchased two cotton dusters and says he is going to buy one more duster. Brazos intends to do his own dusting this year.

Dr. H. B. Paxton soloed the Taylor Cub recently of the Cub Flying Service, of which Robert Putz is instructor.

Luther Caruthers, flying a J-6 Travelair, with one passenger was a visitor here Sunday.

B. A. Black flew his Tank Travelair to Houston for repairs last week.

During the cotton dusting season, Black's airport was the headquarters for the Delta-Air Corporation which maintained a fleet of seven ships here, and J. L. Schroeder maintained a fleet of four ships while the Gulf Dusting Co. maintained two ships. Among the pilots for these various dusting companies were Henry Elliott, Luther Caruthers, Daniel, Wedgeworth, Nagle, Buswell, Gaither, and J. S. Schroeder.

Dick Buswell has been a frequent visitor here for the past two months. It is rumored that he is buying several dusters and securing a number of acreage contracts throughout this cotton section. Dick says that he intends to use Black's Airport as a base. He has his Kinner fleet stored at the Main Street Airport, Houston.

This airport holds the proud record of never having a crack-up on the field, which is likely the good reason for the wonderful student business and passenger hopping.

—L. A. LINDSEY.

Chanute, Kansas

J. A. Douglas, Department of Commerce inspector recently relicensed L. E. Cantrell's OX-Waco for another year. Say, Pop, who did all the walking around, with their thumb, on the top of your Waco's center section?

The boys in the shop have just finished rebuilding and recovering a lower wing on a Kinner American Eagle owned by Mr. Gashe of Emporia, Kansas. Their next job is an Aeronca C-3, owned by Harry McGuire, airport employee.

Bob Daigh and Lorrance Dickerhoof, latest student to solo, are taking time on Lorraine's father's Aeronca. Mr. Dickerhoof is manager of Chanute Municipal Airport.

Fred Grieme, Department inspector, is hangaring his ship, a Lycoming Stinson, at the airport. It was flown from Topeka recently by Verne Carstens.

Harry Taylor, formerly a mechanic in the Army Air Service, for the past six years, is home for an indefinite stay.

Ray C. Barker, test pilot for Beechcraft, stopped here enroute to Wichita from the Miami Air Races. Ray reported an uneventful four hour non-stop flight from Atlanta, Georgia. He was flying a Whirlwind powered Beechcraft, and was accompanied by Walter Beech.

A Braniff Airways Lockheed Electra, enroute from Dallas to Kansas City stopped here when the ceiling at K. C. was reported at 300 feet, accompanied by freezing rains. The airliner later flew to Wichita, where the weather was reported as clear and unlimited. Braniff ships are frequent visitors at the airport.

W. P. A. appropriations will enable Chanute Municipal Airport to build two half-mile runways across the field. Each runway will be 150 feet wide; with an 8 inch rock base, covered with water bound macadam surfacing. Work is already progressing rapidly on the NE and SW runways.

—JAMES BAKER.

Coffeyville, Kansas

Cadet Ralph Macklin was in a few days ago in an Army Curtiss A-12 from Barksdale Field, Shreveport. Cadet Macklin visited here with friends.

Work has started on our new SE - NW runway which

will be of asphalt construction, similar to our present two runways, the new strip will be 200 feet wide and 2800 feet long, which when completed will provide the local field with ample room for anything with wings, regardless of wind direction or weather conditions. Other improvements being made on the field include filling all depressions and leveling of the entire airport.

Melvin Hart, who was with the Inman Brothers Flying Circus the past season, received his mechanics license from inspector Jim Douglas early this month. Melvin intends to accompany the Inmans again this year.

Henry Duncan, local inventor and owner of an OX Robin, has installed a tail wheel of his own design on his ship.

It takes a good deal of maneuvering to accommodate visiting ships of any size in our now-crowded hangar, the following ships being hangared: OCS Spartan, Inman Bros. Ford Tri-motor, Inman Bros. Stinson, Coffeyville Airways American Eagle, Lynn Berentz's Challenger Robin, Henry Duncan's OX Robin, Lee Ferguson's Warner Cessna, and Earl Boyer's American Eagle.

Bill Ong was a visitor the past month, flying a new Beechcraft from Oklahoma City to Wichita. As usual, the OCS Spartan was the busiest local ship during the month. Dame Rumor says we are to have a new ship, possibly two, in the near future—the more the merrier.

HAROLD E. HAGGARD.

El Paso, Texas

V. M. Hugo, formerly with Aerovias Centrales, a branch line of P. A. A., is now with Braniff Airways, Dallas, Texas. Aerovias Centrales closed their offices in November during a technical misunderstanding with Mexico.

Tom Williams, mechanic with Mr. Hugo, accepted a position with Consolidated in San Diego, California.

E. Kepp, former traffic manager for Aerovias Centrales, has accepted a position with the Varney Air Transport, in the same capacity.

Don Davis, Varney, both of Pueblo, Colorado, were business visitors in El Paso at the first of the year.

It is generally rumored that Varney Air Transport is going to take over the Municipal Airport and A. E. Johnson is going to operate down in Mexico. Here's wishing you luck down there, "Johnny."

Jack (Pop) Weiler is now in Los Angeles getting his A. A. T. R.

A. E. Johnson is repairing his J6 Ryan after a slight mishap in Mexico a short time ago.

PAUL LEE.

Kilgore, Texas

Gregg County officials and members of the Airport Committee are working out details to make Elder's Field a county airport, with a modernizing program including addition of another runway, levelling and removal of obstructions from present runways and erection of a large metal hangar, being a part of their plans. Elder's Field being only a ten minute drive down the new concrete highway to Longview, only two miles out of Kilgore, and fifteen miles from Gladewater, the three larger towns of the county.

Recent solo pilots are J. C. Lawson and Russell Chisum. Lawson showed the rest of the hopefuls how it was done when he made three successive three-point landings on his solo flight.

James B. Culver and "Deal" Goodwin flew to Shreveport on a business trip one Sunday this month. James intends to take the test for his private license soon.

Isum Chisum plans to try for a license also, and "Deal" announces he will promote his L. C. to a Transport in the next few weeks.

Among those visiting the port this month were Dewey Stewart, Buddy Jones, Buck Taylor, Frank Merrill, flying the Bennett Oil Co.'s Waco, Garza Wooten, Pilot Gibson, J. D. Reed and Doc Booth.

Major Milo McCune, Barksdale Field, made Elder's Field a visit for the purpose of looking over the Port's possibilities of becoming a class A county airport. After an inspection tour over the field he made a favorable report on the matter, and seemed to think that with the excellent location and the cooperative support back of the project the scheme is headed for a huge success.

Roy R. Taylor, airport manager, Doug. J. Ruthven, and Mr. Clark flew to Barksdale, where they visited with and solicited the advice of General Brandt, of that Field concerning the county airport plan. General Brandt appeared deeply interested and quite graciously offered his services in the matter of putting it over.

New names on the student list include Dr. E. L. Jones Tom DeWitt, Brownie Farrar, Vernon Gower, and Charles Seekamps.

MRS. ROY TAYLOR.

Lakeland, Florida

The $500,000 WPA airport at Lakeland, Fla., under the managerial hand of Mr. Chas. R. Bentley, is fast becoming one of the most beautiful and well equipped airports in the South. The landing area has been ready and available for use for some time, but the hangar is just now nearing completion. The construction is of all-steel and all the frame work is now in place, and work has begun on the roof and sides. The structure is 120x125 feet, with a 25-foot work shop running the entire length of the hangar. It is expected that the hangar will be completed and ready for use in 30 days.

There were some very distinguished visitors in here on an inspection tour Feb. 3. Those included were: Col. Sumpter Smith, Chief of the Chief Laisons Division of Airplanes and Airways; Mr. Robert Odell, Chief Technical Official, both of Washington; Major A. B. McMullen, Division of State Aviation; Mr. Chas. P. Graddick, Superintendent of Division of Airmail Service and Earney Hensley who is also connected with the State Aviation Department.

Recently Billy Hood and Robert Byrd flew down here from Alabama and with the cooperation of Ralph Sargent of this city have opened the Hood-Sargeant Flying School and Service. A Great Lakes Trainer and a Kinner Bird are used in this service and it is very probable that a class A type plane will be added.

Manager Dick Bentley has been very busy for the past two weeks perfecting a tail skid for light planes in order to protect the sod on the landing area, since the City passed a regulation requiring all planes using the port to put on tail wheels or an approved type shoe that would not do damage to the landing area. The fine imposed for violation of this regulation is $5, after the first landing, for every subsequent landing and cost of repairing damage done to the sod.

CHAS. R. BENTLEY.

Longview, Texas

Flying interest has continued with enthusiasm here during the winter months. Six planes are stored here now, almost filling the hangar.

Mr. Roberts of Gilmer, who owns a Warner Commandair, has flown down to see us several times. He has bought an OX Travelair and is going to re-cover it and install a J-5 motor.

Mr. Runyon of Gilmer stores his Parks here during the winter months.

Mr. Kutscher of the Globe Development Company flew to Longview from Oklahoma City in his Kinner Eagle and is having Mr. Hansen check it over for re-licensing.

Mr. Glen Brawley is doing a lot of flying in his J-5 Travelair.

Mr. Chester Graham, who owns a Rearwin, has built up over sixty hours of solo flying and is ready for his private pilot test.

Mr. Edwards recently bought a J65 Robin at St. Louis and is doing some student instruction and charter work.

Mr. K. R. Collins is taking a Limited Commercial Course from Mr. Hansen. They are, of course, using the good old Travelair. He hopes to get his license in two months.

Mr. J. D. Reed of the Texas Fairchild Sales Corporation, spent a week here demonstrating the new Fairchild "24" to a score of persons and prospects.

On January 26th, Mr. Frazier was scheduled to drive a new Nash car by remote control from a plane flown by Mr. Hansen. However, the weather was so cold that the demonstration was postponed until February 9th.

Last month Mr. Don Rice of Delta Airlines landed at the Longview Airport due to bad weather. He was able to get into Shreveport after waiting for the weather to clear.

Longview is still trying to get a good site for its new airport. Efforts are being made to develop a Gregg County Airport to serve the whole county. Such an airport will fill a great need for the East Texas Oil Belt.

HERBERT L. HANSEN.

Lubbock, Texas

It looks like the aviation wheels are starting to roll again around this locality, despite the extremely bad weather the past month, there is still activity.

We have two new proud owners of aircraft—each purchased airplanes in January—M. F. Dagley a Curtiss Robin, and T. C. Meinecke an Arrow Sport. Both are putting in all the time they can between bad weather spells.

Art Chase and Clent Breedlove are doing a little cross country flying to the various surrounding towns with traveling men.

T. C. Meinecke flew his Arrow Sport to Amarillo one January Sunday afternoon to be with the hardware dealers at their convention; he was accompanied by Art Chase, who brought the plane home solo.

The "Stars and Stripes," Fairchild plane of Commander Byrd's first expedition, will be here February first, carrying passengers both day and night.

Major John J. Atkinson is being transferred to Corpus Christi, and this means we will lose the trim little Monocoupe and regret this very much.

Wm. J. Rumback has sold his Spartan to a Mr. Pinkerton of Hereford, Texas.

A class of 20 new students, all for amateur license, probably will be started on the field some time this month. New students are being signed up regularly and looks like a good year for student activity.

The Army advanced navigation flights stopping here for refueling are being delayed considerably due to bad weather.

Some of the Oil Well Drilling Co. men out of Tulsa are making frequent stops here for fuel, going to and from Hobbs, N. M., and Roswell, N. M., and Tulsa.

CLENT BREEDLOVE.

Marshall, Missouri

Sammie Goldin of Sedalia, Mo., a student of Shorts, made his first solo New Year's day. A good beginning for the year of 1936, we say.

Bill Brame and Bob Garnet have taken the wings off their little mid-wing and have taken it to town for the rest of the winter.

The private flyers have all pulled the groundhog act and crawled in the hole for the winter.

Fahlin Propeller Co. reports they have been unusually busy this winter. They have the approval on several propellers for the larger motors.

LAWRENCE SHORT.

Mobile, Alabama

Construction has begun on a concrete runway 2,500 feet long and 100 feet wide at Bates Field. Cost of the runway is approximately $70,000 financed by WPA funds.

The runway of six inches depth, will run north, 23 degrees west, and south, 23 degrees east. This will permit all weather landing for the Eastern Airlines' planes and other large craft that visit the airport.

At the same time the runway is being built, a taxi-strip 300 feet long and 50 feet wide, is also being constructed. The taxi strip will extend from the runway to the ramp.

During the past month Alfred Gwinn Vanderbilt, scion of the wealthy New York Vanderbilt family, arrived in Mobile by rail from Jacksonville, Florida, and boarded his plane at Bates Field, Mobile's municipal airport, for his departure on a business trip to California. Accompanying Mr. Vanderbilt were two ladies and two men whose iden-

THE NEW 1936 PORTERFIELD
TWO PLACE *cabin* MONOPLANE

has decidedly more speed than any airplane under twice its price; other performance is comparatively the same. It is the only airplane in its price range which cruises over 100 miles per hour, and it lands about as slowly as any of them. It uses three gallons and three quarts per hour for student training and is an ideal student training plane. Cross country, 105 miles per hour cruising speed is interesting. Time payments. $1,795.—A. T. C. No. 567.

PORTERFIELD AIRCRAFT CORP.

2506 McGee Trafficway Kansas City, Mo.

tity could not be learned. His plane is a big Douglas amphibian and was one of seven multi-motor type planes arriving at the local airport on that one day. William Kissam Vanderbilt, also of the wealthy New York family, arrived in Mobile aboard his yacht Alba and immediately after tying up at one of the local dry docks, a big Douglas amphibian was lowered to the water's edge and immediately boarded by Mr. Vanderbilt, who then departed for a business trip to New York. Mr. Vanderbilt expects to return to Mobile within ten days by plane and personally skipper his attractive yacht on a cruise of the East Indies.

C. D. DAVENPORT.

Sarasota, Florida

The appointment of Guy Ham, Jr., of Sarasota as distributor for Rearwin airplanes for the West Coast of Florida, was announced recently. He has organized a flying school at the Sarasota airport, using a Rearwin "Sportster" powered with a LeBlond 85 engine. The school is known locally as the Rearwin Flying Service and is a subsidiary of Cape Cod Seaplanes, Inc., of Falmouth, Mass. During the summer months, Mr. Ham's company operates seaplanes in that section of the Cape. A number of students have already started their primary training and a number of licensed pilots are renting time on the ship.

Powell Crosley, Jr., head of the Crosley Radio Company of Cincinnati was forced to make his annual trip to Sarasota this year via railroad, due to the fact that his private airport just outside of Cincinnati was snowbound. He usually makes the trip to his winter home here in about 4½ hours in his Northrup Gamma.

RICHARD E. LINDSAY.

St. Louis, Missouri

The "Clevelander," a Bellanca, in which Prosser and Stohl have announced their intention of attempting to break the long-distance non-stop record now held by Codos and Rossi of France, has been given a complete overhaul in the shops of Parks Air College. Capacity of the fuel tanks is sufficient to provide as estimated range of 6300 miles. A new Wright J6-9, delivering 420 H. P., has been installed.

The new student enrollment at Parks Air College totals 31 for the Winter term, which opened January 6. The record enrollment of 253 established at the beginning of the Fall term in 1935 was maintained.

Enrollment by schools follows: Executive Transport Pilot, 40; Engineering 82, and Master Mechanic's Flight, 97. A total of 34 men are taking special courses.

The new engine test stand was placed in service at the start of the Winter term. It accommodates engines of from 30 to 900 horsepower. A set of instruments in the control room furnishes all the data needed on the operation of the engine tested.

Columbia Airlines, Inc., is establishing new passenger and express service between Chicago, Ill., Fort Wayne, Ind., and Dayton, O. The new service connects with Columbia's north and south planes at Dayton. Vultee planes will be used.

The company has moved its western terminal and maintenance base from Curtiss Airport, East St. Louis, Ill., to Lambert-St. Louis Airport, Robertson, Mo.

The new schedule calls for plane departure from St. Louis at 10:45 A. M., and arrival at Louisville, Ky., at 1:15 P. M. Connections are made here with Eastern Air Lines planes for Atlanta, Ga., Jacksonville, and Miami, Fla. The northbound plane leaves Louisville at 3:20 P. M. and arrives at St. Louis 5:55 o'clock. Connections are also made at Louisville with Columbia's planes to and from Dayton, O., and Detroit, Mich.

HOWARD BARMAN.

San Antonio, Texas

P. H. Hebert of Hangar Six, Winburn Field, has found more use for a highway filling station than driving in with his car to get some gasoline.

Bucking a headwind while flying to Laredo in a four-cylinder Taylor Cub, Hebert noticed his gas supply was getting low. At the same time he spotted a highway fllling station about half a mile from a field. Some men were standing beside the station.

Swinging into action, Hebert piloted his plane toward the station and as he was over it he let out a yell:

"Hey, send me some gasoline!"

By the time he landed in the field and had taxied toward the highway, an attendant from the station drove up with five gallons of gas. Needless to say, it was automobile gasoline, but the Taylor Cub, which has a nine-gallon capacity, burns that, too.

To Earn More Money in AVIATION Train at LINCOLN*

Aviation executives who pay $200 to $500 a month for Pilots and Mechanics demand men with thorough, expert training . . . the kind of Approved training Lincoln offers you. Training at this "World's Best Known Aviation School" is thorough from every standpoint.

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Individual Instruction Methods assure rapid, more thorough progress. Our instructors and executives give their entire attention to your aeronautical education. For a quarter of a century Lincoln has sent excellently trained men out into the world to win rich rewards. Now in 25th year; 15 years teaching aviation.

Approved Modern Equipment — We use only planes which are inspected and equipped by the U. S. Department of Commerce. You learn to fly open cockpit biplanes, low wing and high wing monoplanes, small and large transport types of cabin planes for complete experience. Both flight and ground school buildings and facilities are among the finest in America. Both under Government Supervision. High class instructors. Thoroughly equipped buildings.

The Best Time to Start is NOW—The men training at Lincoln now are getting ready for the many big-pay jobs which tremendous aviation development programs are creating. Now is the time to join this happy, ambitious group of young men.

Part-Time Employment offered a limited number of ambitious men to cover cost of board and room while training. Hurry! Now is the time to start at Lincoln for successful aviation career. Write now for complete information.

Lincoln Airplane & Flying School
804 Aircraft Bldg. Lincoln, Nebraska

Al H. Tuerpe, chief pilot of the United Aero Corporation, Winburn Field, left last month for Cincinnati, Ohio, to look over the 1936 models of Aeronca planes, for which his company is the distributor. He left on Braniff Airways and will be gone about two weeks.

Dick Hair, operator of Modern Air Travel Corporation, Winburn Field, is looking for an auxiliary field for his students to use when traffic is heavy at the local municipal airport, such as holidays and Sundays.

Lincoln Borglum builds up time at Winburn Field. He went up with Q. M. Corley, air corps reserve officer, who is an instructor for Modern Air Travel. Corley is a first lieutenant in the reserve, having graduated from Kelly Field in 1932. He has been with Modern Air Travel six months.

Nineteen air corps reserve pilots in the Brownsville area have set a mark in credit hours earned that is believed to establish a record unequaled in any part of the United States. These 19 officers, ranging in rank from major to second lieutenant, have a total of 8,609 active duty credit hours in grade, and 14,064 inactive duty credit hours in grade, according to Capt. Winfield S. Hamlin, air corps, unit instructor, organized reserves.

The requirement of the war department is that each reserve officer must earn 100 hours active and 100 hours inactive duty hours while holding his present grade. The average of the Brownsville reserve pilots is 453 hours active duty credits and 740 hours inactive duty credits. Here is a mark for 24 San Antonio reserve pilots to shoot at.

P. H. Hebert of Hangar Six flying school has found two more air fields in this section of the state to add to the total in Texas, which already ranks second among the states of the country.

Both are private fields on ranches and both are marked with a circle. One is 11 miles north of Brady on a ranch owned by Harry Curtis of Brady. The other is one and a half miles west of Fort McKavett, which is about 30 miles south and east of San Angelo. Each field has aviation gasoline that pilots may obtain.

The next issue of the Air Commerce Bulletin will probably list these two fields. Curtis told him, Hebert said, that the municipal airport at Brady is being graded and put in good shape. Hebert also said that the field at Llano is being reconditioned through the efforts of Mayor T. J. Watkins and Harold McLean, editor of the Llano News and former San Antonio newspaper man.

Dr. John D. Gleckler, examiner here for the department of commerce, bureau of air commerce, was elected president of the San Antonio Chapter, National Aeronautic Association at an organization meeting held at the Blue Bonnet Hotel last month.

Joe Payne was chosen first vice president, and Marshall Tipton, insurance man, was elected secretary-treasurer.

The meeting was graced with the presence of Lucille Ferguson, charming aviation devotee and the only representative of the fair sex to become a charter member.

T. D. HIGGINS.

Wichita, Kansas

The big Granville racer departed from the municipal airport January 13th after a stay here of almost four months. Grounded here by motor trouble while being flown in the Bendix Race by Royal Leonard last Fall the big ship has undergone extensive repairs and overhauling. The Wasp engine was removed and sent to the Pratt & Whitney factory. A new super-charged engine having a maximum power of 910 h. p. was shipped here and installed by Louis Werner and Bob Landers with the facilities of the Landers Flying Service.

TWA announces new titles for personnel to begin the new year. The first pilot is now known as Captain, while the second pilot is termed first officer. The field manager is now called station manager. More and more the trend is to operate the big airliners much in the same way as large ocean going vessels and the day is not far off when the crew of an airliner will consist of several persons. Hence the titles given. The term station manager also avoids confusion with that of the man operating the airport in general.

The Cessna Aircraft Company announces the sale of a C34 model to Clinton Seal, merchant of Salt Lake City, Utah. The sale was made by Ray Peck, distributor for Utah, who came to the factory to take delivery.

Recent sales by the Beech Aircraft Company include a B-17R to George F. Hammond, an aeronautical engineer of Santa Barbara. A B-17R also goes to Fred Harvey of Kansas City, Mo. Harvey will use the ship for pleasure and for flying for business purposes over the Fred Harvey System.

Work is being pushed rapidly on the concrete runways on the municipal airport. A WPA project, the work promises to give Wichita one of the best airports in this section of the country. Visiting fliers are warned to observe carefully the red flags placed to guide pilots clear of the areas now being worked on.

Dwane Wallace, general manager of the Cessna Aircraft Company of Wichita, Kansas, announces the sale of a C-34 stock model to F. W. D. Grant, managing director of Surrey Limited, an aviation concern located at Croyden Airport at London, England. Outstanding interest in the negotiation arises from the fact that the ship is to be entered in the Cairo Handicap Race, which will be staged March 16th by the Aero Club of Cairo, Egypt. The ship will be piloted by F. L. Turner, English pilot of considerable standing and formerly pilot on the London to Paris airway run.

The monoplane will be shipped to London and assembled there. After additional tankage has been installed temporarily in the fuselage the plane will be flown over 3,000 miles from London to Cairo with one 500-mile water hop over the Mediterranean Sea.

Grant and Turner purchased the plane after contacting many factories in this country and after completing negotiations in Wichita they left on the TWA Sky Queen

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January 30th to return to England. This is the first C-34 the Cessna concern has sold abroad.

The Beech Aircraft Company rang up another export sale the latter part of January with a B17-R Wright 420 h. p. engine Beech craft sold to Rene Drouillet. Drouillet has had prevoius experience with the Beechcraft since he purchased a Jacobs powered biplane a year ago while associated with another concern in Paris. However, he will operate the new ship independently in flying over the French Republic. He came to Wichita personally to close the deal and then returned to Paris, where he is located.

C. I. MERRELL.

Wichita Falls, Texas

Clarence Hammond has been taking his Barling on some long trips lately and has had some mighty good times. Mr. Hammond has about sold Norman Adams on the idea of flying since he has been accompanying him on many of his trips recently.

Fred Reindenhour, pilot for Mr. R. A. King, has been very active flying Mr. King's Waco on several long trips.

Gene Harvey, Wichita Falls' most recent pilot, exclaims that he has been ready for a pilot's test for quite some time now, and threatens to come into Fort Worth or Dallas to take it. Something tells us that Gene will be flying his own plane real soon.

Mr. Douglas Wood, traffic manager for Braniff Airways in this district, has been contacting the air-minded folk of Wichita Falls to some great advantage and we believe that air traffic out of here will increase somewhat in the near future.

Meet the Colonel

(Continued from Page 9)

Branch in San Francisco until the end of 1921. Beginning in 1922 he left for Boston, where he was President of the Marmon Boston Company until February, 1924, when he was appointed Vice-President of the Nordyke and Marmon Company, Indianapolis, Indiana, in which position he served until Labor Day, 1925. On that date he accepted the appointment of Vice-President of the Stutz Motor Car Company of America, Inc., with headquarters in Indianapolis, Indiana.

He remained as Vice-President of this later corporation until January 24, 1929, at which time he was elected President and later was also elected Chairman of the Board of Directors of the Stutz Motor Car Company of America, Inc., which positions he has held up to the present time.

In April 1934 he was a member of the committee which awarded the Collier Trophy for the outstanding aeronautical engineering achievement which had been proven by practical use in 1933.

During 1934 he served on the Baker Board, a committee appointed by the government to investigate the effectiveness of our Air Corps in national defense, due to charges growing out of the carrying of the air mail by the Army.

And now, in the early days of 1936, he comes with domestic air transport, opening a new chapter that is yet unwritten, but promises to vie in importance with his predecessor years as far as outstanding accomplishments and able services are concerned.

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SIKORSKY AMPHIBIAN S-38C: Twin Wasp "Cs," equipped with Hamilton Standard Controllable Propellors, electri starters and generator. Sperry Artificial Horison and Gyro Compass, Lord Shock mounted. R. C. A. Beacon Receiver. Thermocouples for cylinder temperatures. Turn and bank, rate of climb, etc. Completely equipped for water operation. Plane in perfect condition.

Total time on plane 825 hours since rebuilt at factory March, 1933. 275 hours since complete overhaul by Pan American Airways, May, 1935. Time one engines since major overhaul: Left, 270 hours; Right 20 hours. Total time on props, 275 hours.

Other additional equipment.

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Six-place Ogden Trimotor Osprey. Total time on engines and ship only 226 hours. 18 hours since major. Interior and exterior finished like new. One owner. Three 90 horsepower Cirrus engines, luxurious appointments, including toilet. All standard instruments. Fuel consumption: 15 gallons per hour. Cruising range 540 miles. Original price $18,000. **Priced for quick sale: $2000.00.**

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FOR SALE—One Warner Cessna, and one Challenger Robin. For information write Lynn Berentz, Coffeyville Airways Corporation, Coffeyville, Kansas.

FOR SALE—Travelair; Warner 125. No time on motor since major. Excellent throughout $890.00. Two J5 motors just majored. J5 parts at large discount. Warner motor, propeller, cowling and motor mount for Travelair. Complete ready to install. R. C. Downing, Box 532, S. S. Station, Springfield, Mo.

FOR SALE—Taylor Cub airplane NC-15358, latest type Continental A-40-3 engine. Bought new in August, 1935. Has had 355 hours total time. Both ship and motor in top condition, never damaged in any way. Standard silver and maroon paint, special seat covers and cushions, winter enclosure. Value new $1576.00. Offered at $1035.00 for immediate sale. Save a third on this five months old ship. HANGAR SIX, INC., Winburn Field, San Antonio, Texas.

AERONCA C2—Licensed. Late type with landing gear. New covering. $425. Challenger Robin, licensed. Motor just majored. $985. Monty Barnes, Municipal Airport, Wichita, Kansas.

FOR SALE—Tank 63 aircooled 115 h. p. Robin. Ship in best of condition, worth $1200. For sale at $800 fly away Brownsville, Texas. Maynard Penick, Brownsville, Texas.

KINNER AMERICAN EAGLE. Late type. 15 hours since major. Plane just relicensed. $575. Herbert L. Hansen Box 862, Longview, Texas.

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An Aircraft Radio TRANSMITTER

And now! An aircraft radio transmitter for the private flyer. Complete transmitter weighs less than 25 pounds and simple to operate. Works all weather and beam stations for 150 to 250 miles in day time and 300 to 400 miles at night. It is one of the most compact and economical radio transmitters in cost and operation. Write or wire for further information.

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Stinson Reliant landing gear complete with oleo and hydraulic brakes.

Two J-5 crankshafts and complete line of J-5 parts. Wasp K. E. valves, miked and tested with stretch gauge.

One set of Lycoming rods, Lycoming front, main and rear section.

One C Wasp cylinder with piston and overhead valve assembly ready to go.

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Mid-Continent Airlines, Inc. Meacham Field, Ft. Worth, Texas

FOR SALE—J-5 Stinson 4 plcm. Licensed until December 1, 1936. Bendix wheels. Ship in A-1 condition, $950. Chanute Municipal Airport, Chanute, Kansas.

FOR SALE—J5 4000B Travel-Air biplane. 550 hours service time. Engine has had 25 hours since major and ship just relicensed for a year. Always hangared and finish like new. What is your offer? Bob Landers, Municipal Airport, Wichita, Kansas.

FOR SALE—Ryan Brougham. Excellent condition. J5 Standard steel prop just etched, tracked and balanced. Also want small plane for training purposes such as Monoprep. H. C. Harper, Carthage Airways, Carthage, Mo.

MISCELLANEOUS

TO TRADE—Lincoln Sport Phaeton on small airplane. Will consider all trades. Airport Manager, Lubbock, Texas.

FOR SALE—Switlik seat pack parachute in perfect condition. Canopy entirely unspotted and chute never been used for jumping. Must be seen to be appreciated. Write or wire Duke Widiger, McPherson, Kansas.

FOR SALE—Patented airplane control. Can control elevator, ailerons and rudder with one hand. Write the inventor, Henry Duncan, 903 Lincoln Street, Coffeyville, Kansas.

WANTED—Used Cirrus engine. Good servicable condition. American Hi-Drive preferred. Give all particulars and best cash price. Gene Rawdon, 520 Laclede, Wichita, Kan.

Beautiful hand-carved wooden wings approximately three inches in spread, the ideal gift for your wife, best girl or mother to be used as breast pin. Natural wood color. Price $1.00 Send orders to Box 205, Southwestern Aviation.

Quality Base

(Continued from Page 17)

jacks and plugs with line switches installed on the panel.

Carburetor overhauling and testing are done on a remotely situated bench. Special tools expedite the overhaul; a hinged bracket allows work on top and bottom without use of a vise and prevents damage to throttle arms, etc. Float level is obtained by a gravity flow from either of two tanks, one at a height to give one and one-half pounds pressure and one for three pounds pressure. These tanks are filled from a tank below the bench by a wobble pump; a three-way valve allows a flow to the carburetor which is placed on straight edges in a pan sunk in the bench. A drain from this pan leads to the reservoir below. Thus the gasoline is kept clean and requires no manual handling. The gas is replaced frequently to prevent errors from change in weight due to evaporation and different octane values used. Jet flow is checked by the flow from a small tank above the bench, overflowing through a line in which is placed the jet under test, with a fall of 50 cm. This line empties into another small tank which overflows into a graduate, the filling of which is timed; the time for a given volume to flow must conform to manufacturers' speed.

Machine equipment is loacted here for various operations, and the making of tools, fixtures, etc. This includes a South Bend 9"x3' bench lathe, with attachments, a Boley jeweler's lathe, with wire chucks, adjustable chucks, etc., a bench drill with complete number and fractional drills, bench grinder, surface plate, small arbor press, precision dial indicator, and many special fixtures comprise the fixed equipment. In addition to innumerable small tools are many special taps and dies, as small as 0-80, threads per inch, and inside and outside micrometers, among which is a pair of special one-inch mikes, accurate to .00005, or one-half of one ten-thousandth.

Hedge Hopping the Books

(Continued from Page 14)

pictures on the long trip—Pan American Airways furnished the bulk of those appearing in the volume.

IS "Hazel Handel" Mae Haizlip? and is "Kay Englehardt" intended to represent the famous Amelia Earhart? Pilots are going to get a kick out of attempting to identify the ten gals who appear in "WOMEN IN THE WIND" (pub. Farrar & Rinehart, Inc. $2.00). The author, Francis Walton, is former aviation editor of the N. Y. Herald Tribune and the lad knows his ladybirds!

The tale, though labelled fiction, seems to come very close to actual fact and concerns a women's transcontinental air race. The flying dope is very interesting but the real fun comes in the nightly meetings in the hotel rooms at the overnight stops. Boy, how the gals hop to it with verbal and physical battles!

Forced landings, sabotage, suspense and the one male in the troop (the referee who departs suddenly after a certain night at the hotel—'all combine to make a jam-up good book on a subject seldom, if ever, treated so well in fiction. Francis Walton's knowledge of women pilots was surely not gotten from a book but he has managed to get this knowledge written into a book. I don't believe the ladies will like the acid-sharp portraits but, if you've been around women pilots, I know you will.

Aircraft 1936

(Continued from Page 17)

Wing Area (incl. ailerons and fuselage)	352 sq. ft.
Landing Gear Tread	13 ft. 6 in.
Volume Passenger Cabin (incl. pilots' compartment)	285 cu. ft.
Nose Baggage Compartment Volume	30 cu. ft.
Rear Baggage Compartment Volume	33 cu. ft.
Maximum Width Inside Cabin	60 in.
Maximum Height (floor to roof)	60 in.
Maximum Length Inside Cabin	14 ft. 8 in.
Engine Data	
H. P. at R. P. M. for Cruising	300 at 2,000
H. P. at R. P. M. for Takeoff	450 at 2,200
Engine Rated Altitude	5,000 ft.
Engine Blower Ratio	10 to 1
Compression Ratio	6 to 1
Performance (Full Load)	
Takeoff Run at Sea Level—with 2-position propeller	780 ft.
Takeoff Run at Sea Level—with constant speed prop.	600 ft.
Maximum Rate of Climb at Sea Level (wheels up)	1,400 ft. min.
Landing Speed at Sea Level (flaps down)	65 m. p. h.
Fuel Consumption at Max. Rated Cruising Power	52 gal. hr.
Cruising Range—with 140 gal.—Max. Rated Cruis. Power	530 mi.
Fuel Consumption—Approx. 60 per cent Power	39 gal. hr.
Cruising Range—with 140 gal.—Approx. 60 per cent Power	650 mi.
Service Ceiling—Both Engines	24,800 ft.
Absolute Ceiling—Both Engines	27,000
Absolute Ceiling with Full Load on One Engine	10,200 ft.
Absolute Ceiling—Half Fuel Dumped—One Engine	1,000 ft.
Maximum Speed at Sea Level at 100 per cent Power	219 m. p. h.
Maximum Speed at 5,000 ft.	231 m. p. h.
Cruising Speed at Max. Rated Cruis. Power—Sea Level	192 m. p. h.
Cruising Speed at Max. Rated Cruis. Power—5,000 ft.	201 m. p. h.
Cruising Speed at Max. Rat. Cruis. Power—10,000 ft	209 m. p. h.
Weight Data	
Gross Weight	7,925 lbs.
Empty Weight (incl. std. equip. and W. E. 2-way radio)	5,355 lbs.
Useful Load	2,570 lbs.
Passengers (6)	1,020 lbs.
Pilots (2)	340 lbs.
Cargo (mail, baggage, express, etc.)	445 lbs.
Maximum Oil Capacity (14 gal.)	105 lbs.
Normal Fuel Capacity (110 gal.)	660 lbs.
Maximum Fuel Capacity (140 gal.)	840 lbs.
Wing Loading	22.5 lbs. sq. ft.
Power Loading	8.81 lbs. h. p.

A. C. C. Elects Officers

Leighton W. Rogers was re-elected president of the Aeronautical Chamber of Commerce of America, Inc., at its annual meeting January 30. Other officers elected include: three vice presidents, L. D. Bell, president of Bell Aircraft Co., Buffalo, N. Y.; Robert Gross, president of Lockheed Aircraft Corp., Burbank, Calif.; and Charles E. Parker, Washington, D. C.; secretary, G. M. Bellanca, of Bellanca Aircraft Corp., New Castle, Del.; treasurer, Charles F. Barndt, president of Great Lakes Aircraft Corp., Cleveland, O.; assistant treasurer and assistant secretary, Frank J. Walsh, Passaic, N. J.

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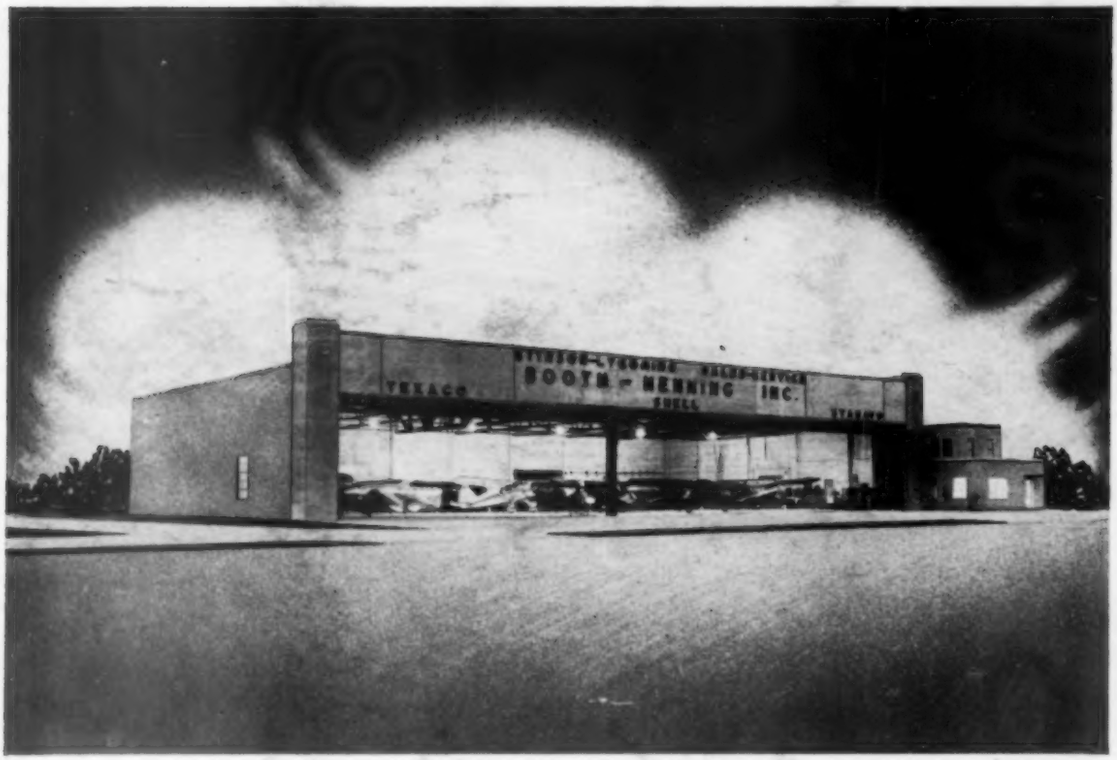

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